

GLC puts technology in reach of jobless

by John Kavanagh
UNEMPLOYED Londoners are being brought together with academics to create jobs by exploiting bright ideas. The Greater London Council is putting £4 million into setting up what it calls technology networks to make expertise and equipment at London polytechnics and universities available to "ordinary people".

The project, announced today, is backed by two polytechnics plus researchers at St Thomas' Hospital, Imperial College and City University.

The four technology networks, formed by the GLC's Greater London Enterprise Board, will have shop-like centres where people can go to discuss their own ideas or set up their own businesses using ideas from the centre.

Workshops and second-hand equipment will be available to get ideas to the prototype stage. Network centre staff and academics will provide technical advice.

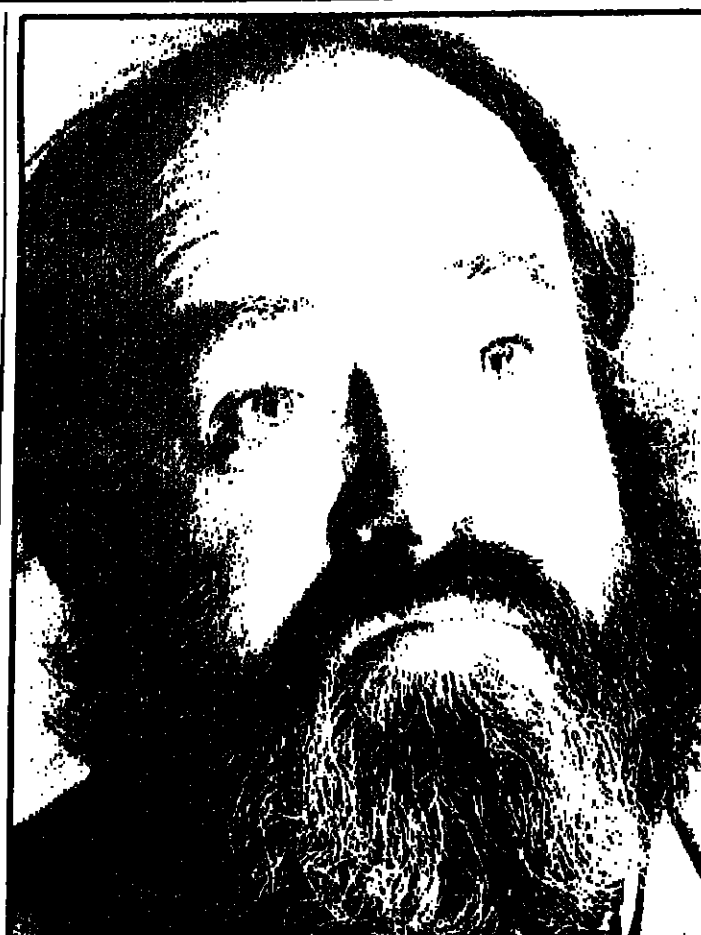
Existing businesses will also be able to draw on the pool of ideas. Royalties will be re-invested in the networks.

"Enthusiasm among researchers and community groups is such that ideas for the product bank are already piling up, ready to be launched as soon as the networks open," said Dr Michael Cooley, director of the Greater London Enterprise Board's technology division.

These ideas include a robot arm, medical expert systems, energy monitoring products and a controlled entry system for flats and old people's housing.

"The response of London's research institutions and their staff to the networks in the preliminary stages has shown the great enthusiasm they have for making their work more relevant to ordinary people," Cooley said.

One in eight of London's workforce is unemployed and there are 33 million square feet of idle factory space in the capital.



WILKINSON... "Some users have a cavalier attitude."

DEC aims to put paid to pirates

by John Kavanagh
DIGITAL Equipment is aiming to stamp out software piracy in the UK in a bid to save £10 million per year - 5% of UK turnover.

In response to requests from users and official systems houses for clearer information, the giant US manufacturer is to issue licence certificates with each software product. At the same time it will "look more closely" at deliberate piracy in the UK.

These initiatives are led by Andrew Skinner, who took on the newly-created job of software licensing manager when DEC's copyright lawsuit against systems house Darkcrest got under way at the end of last year.

"We're under pressure as a supplier to keep business simple," he said. "In the wake of the Darkcrest case, people have been asking where their licence is and what it means."

"The conditions are laid out in the contract, but often the people

signing the contract are not the users. So we will now issue certificates with the products explaining the terms. We've been through the wording several times to get it as simple as possible. We want customers to feel legally comfortable about using our products."

Skinner said that some piracy took place because users did not understand all the implications of a licence. A user with five computers might get one copy of an operating system update and copy it for the separate processors without realising DEC should be paid for each copy.

But there is also a "tiny minority" of companies which deliberately pirate software products. "We are extremely concerned about deliberate piracy," Skinner said. "Whenever we come across it we are bound to follow it up, because it is unfair to customers which pay the proper fee."

Archie Wilkinson, chairman of the DEC users association, was

pleased the company was responding to user pressure. "We don't want anyone breaking the law unintentionally," he said. "So users have been penalised by licence position was."

But he added, "Some users have a cavalier attitude. And we are surprised at how law-abiding UK users are."

DEC's moves are supported by customers. Bernard Conlon, marketing director at authorised computer distributor Minicom Commercial Software, said: "I hope anyone selling software illegally is put off by this. It's by other firms costs us money."

But Conlon pointed out that DEC still had no control over the sale of software by systems house to users. "The user has a contract with the systems house, which is a contract with DEC. Some users have come unstuck by getting licensed software," he said.

SERC turns to CAM

by John Riley

A MAJOR new computer aided manufacturing programme involving industry and universities is to be launched shortly by the Science and Engineering Research Council.

SERC hoped to start the £15 million, five-year applications of Computers to Manufacturing Engineering programme as soon as possible, and was to set up a separate directorate to run it, said Peter Smith, deputy co-ordinator of the SERC Industrial Robotics Initiative, last week.

"We've concentrated on robots until now, but that is only one part of the application of computers to the manufacturing scene," he said. "Now we will be bringing the other areas up to scratch. They will include computer aided engineering, flexible manufacturing

systems, factory communications and manufacturing software."

However, a questionmark hangs over the funding. For the new programme Smith wants three times the annual £1.2 million that SERC has available already for its robotics programme. "But in any case," he said, "it will go ahead whether or not we get the money. The money will go primarily to universities, but like the robotics programme, we will have close links with industry."

Earlier this year the Department of Trade and Industry extended its Computer Aided Design and Manufacturing Awareness Programme, adding £10 million to the £6 million three-year allocation that was made in October 1981. It is expected that there will be liaison between the DoTI and the new SERC programme.

Control Data turns banking into a single operation

by Dave Madden

CONTROL Data has consolidated its banking systems and service arms outside the US into a single organisation in an effort to increase its penetration of the international banking market.

The new operation, called Financial Information Services, brings together DEC OEM and banking systems house Arbat, and Control Data's own Business Information Services unit. It will be based in London, and Jeff Harris, managing director of Arbat, will head the division.

"When Control Data bought Arbat in March this year, the obvious question was what would they do with it. Well, Financial Information Services is the answer," said Harris.

According to one spokesman, Financial Information Services "will give Arbat more confidence and credibility in the international banking and financial world."

Control Data vice-president of services, George Hubbs, described the move as "a reaffirmation of our commitment to the financial marketplace" made in March, and it confirms the company's stated intention of using Arbat to learn how to do business in vertical markets.

The announcement removes any doubts that Control Data might treat Arbat as a short term investment.

In effect, Financial Information Services merges Arbat's real time banking systems - the Series 700 running on DEC Vax and RDP-11 machines - and its Gateway and Intelix systems with Control Data's bureau network of independent support services running on IBM hardware.

Arbat claims that the technical links between its systems and services are strong, and that the new Financial Information Services will offer a more integrated service to its customers.

Harris said that Arbat had had a good six months since acquisition and he is looking for turnover of \$30 million this year. Business Information Services will go close to \$30 million outside the US too.

Arbat now has 100 major clients.

Business Information Services (BIS) was the name given to the bureau computer unit by Control Data to the new bureau company, bought by IBM in 1973 - although BIS did not advertise the fact in the past because of confusion with BIS applied Systems.

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Alvey issues new software strategy

by George Black

AN Information Systems Factory by 1989 is the key element of the Alvey software engineering strategy, which is published this week.

The strategy rests on the argument that market conditions will be more significant than technical excellence. The emphasis of the paper, published by the Alvey software director David Talbot, is on long-term strategy, and speaks of a "need to protect against an undue dependence on the Unix base."

The document points to the necessity of moving from the "present ad-hoc craft practices" to "capital-intensive methods of efficient software production". It also argues that the UK should learn a trick from the Japanese by "importing ideas and methods rather than products".

The economic importance of the effort is stressed by calling for a close monitor of the UK software import bill, especially the import of tools.

At the same time, the value of the capital being used by every programmer in the country should be tracked. And techniques should be formalised for measuring programmer productivity, says the report.

The Alvey directors have taken on their own shoulders the responsibility for persuading British managers to regard the use of the new software tools as normal practice.

The software engineering five-year budget totals £65 million, with around £38 million support from government. It will be run by a small management team from public and private sectors who will farm the work out to others. Incorporation of the real-time language Ada into the scheme has been ruled out.

Talks on a major research venture on Ada were resumed this week between the Defence Ministry and the ICL-led consortium Ada Group. Alvey directors are hoping that a compromise on the vexed question of financing the Ada APSE will be reached so that they are not forced to mount a rescue operation.

As far as innovation is concerned, Talbot urges that the scale of UK research must be increased to compete with international competition and to introduce better co-ordination.

Innovation should be aimed at backing a number of promising approaches and testing them on life-size projects, rather than trying to evaluate them on apparent success in small-scale use.

The Alvey directors have taken on their own shoulders the responsibility for persuading British managers to regard the use of the new software tools as normal practice.



TALBOT... "Market conditions more important."

Voices and alarms

by George Black

A VOICE driven word processor and a knowledge-based alarm system are the latest pilot studies for demonstrator projects under the Alvey Programme to be given the go-ahead.

BP's research centre at Sunbury will be working with its software subsidiary, Scicon, on the knowledge-based alarm system. The idea is to develop a real time method of sorting confused incoming warning signals. The end-product could be used in intensive care units of hospitals, on battlefields or in nuclear power stations.

The demonstrator project, if approved, is likely to involve a large teaching hospital, the Admiralty surface weapons establishment and several hardware manufacturers and instrumentation specialists.

The scheme is intended to span the expert systems and man-machine interface elements of the Alvey programme.

The other pilot study by Plessey is in the man-machine interface area. It aims at developing a word processor that could be driven by the human voice. Alvey programme deputy director Laurence Clarke stressed the need to put the product on the market for a realistic price.

He said the pilot studies needed to be under way as soon as possible to establish research goals. The main contractors for demonstrators had to be companies with

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several hardware manufacturers and instrumentation specialists.

Multi-million PC deal for Welsh firm

WELSH subcontractor AB Electronic Products has won a multi-million pound deal to supply printed circuit sub-assemblies for the IBM Personal Computer. IBM would not reveal the value of the contract, AB's biggest yet, but it was part of an effort to increase European production at the Greenock plant. AB already builds Acorn's Electron home computer, and has done sub-contract work for IBM since 1966.

Plessey boss

FRANK CHORLEY has been appointed executive chairman of Plessey Telecommunications and Office Systems (PTOSL), replacing Des Pitcher. Chorley, previously deputy chairman and managing director of Plessey Electronic Systems, also became deputy chief executive of the whole Plessey Group. Eric Clark takes over as managing director of PTOSL, reporting to Chorley.

ICL denial

ICL has lost no time in denying what it describes as "serious allegations" made in the *Sunday Times*, that a confidential document is circulating among ICL's top management suggesting that the company's future looks far from healthy. ICL said its executives had seen no such report, and the company went on to contradict all the criticisms made by the newspaper article.

Ferranti ahead

FERRANTI's half year profits are up 25% to £14.8 million on turnover ahead 30% at £207 million. Its order book stands at a record £500 million, up 17% on this time last year. Ferranti reports growth in its three main areas.

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ICL doubles its profits to £45.6 million

by John Riley

ICL last week announced that it was moving further into the black, with doubling of profits and a 17% increase in turnover for 1983.

Capping that news, it gave preliminary details of its next generation personal computer, and last week reduced its 2900 maintenance charges by 12%.

ICL's pre-tax profit for 1983 was £45.6 million, compared with £23.7 million last year, and turnover increased from £720.9 million to £846.5 million over the same period.

Currency movements and cash from Computer Leasing, acquired in June 1982, accounted for £3 million of the increase in turnover, giving a "true" turnover increase of 12%.

But ICL chairman Sir Christopher Laidlaw warned that next year would be tough. "Don't expect the rate of progress to be as fast next year," he said. "We don't envisage a re-doubling of profits next year. Although we have confidence in the financial situation and our product strategies seem sound and properly targeted, we advise

caution."

He added: "There are considerable competitive pressures and cause for concern about robustness in one or two main markets."

Both Laidlaw and Robb Wilmot, ICL managing director, emphasised that the development, manufacture and launch of new products in 1984 would eat into resources, and that although the DM1 distributed mainframe would be available in late 1984, it would not have any effect on 1984 sales figures.

Laidlaw said that after Christ-

mas ICL would launch decision support and "quick build" systems, as well as an upgrade to its PC. The 16-bit PC would have colour, would offer concurrent CP/M and would support up to four users, he said.

Laidlaw added that ICL's PC strategy was geared to the multi-user segment. Wilmot confirmed this: "ICL is not going into the home market."

Wilmot did not break down sales figures according to different types of machine, but said orders

Continued back page



PICKETT... "We're talking about a fixed-price job."

Doubt falls on Ada research

by George Black

THE future of UK research into Ada - likely to be the real time language of the next decade - is in doubt, after the government and British Telecom pulled out of a major project.

The stumbling block was that BT and the Ministries of Defence, and Trade and Industry wanted a fixed-price contract, while the consortium of developers, Ada Group Ltd, seems to have insisted on being given a cost-plus contract.

Talks between the two sides have been going on all year, but now BT says it is getting nowhere and will look elsewhere for help. However, Ada expertise in this country is limited, and the Ada Group members, ICL, SDI, SPL and Software Sciences, hold much of it.

The scheme that has been dropped was a £9 million Chilli and Ada programming support environment ("Chapae") to be created over 4 1/2 years. Recommended both by an official government report and by NEDO, it involved

putting the US Defence Department's Ada language and BT's language, Chilli, on to ICL 2900 and DEC Vax machines. A compiler was due to be written by 1985, with the whole job to be completed two years later.

The project consisted of a minimal Chape (MChape) being undertaken by Ada Group, and a set of tools being written by the CAP-headed Augusta Consortium. Now Augusta is hoping that the MChape part will be put out to tender again, so it can bid for the work.

Meanwhile Augusta's technical representative, Michael Pickett, was hopeful that its own part could still go ahead.

Originally, the price was on a time-and-materials basis, but now we're talking to the MoD about a fixed-price job," said Pickett.

Another possibility now is that the Chilli and Ada elements of the work could be split up, with BT and the ministries taking a different view of the funding arrangements.

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Rival bank network is planned

by Philip Hunter

A NATIONAL network of cash dispensers to compete with the four major clearing banks is being planned by a consortium of banks, building societies and insurance groups. The plan involves using the 22,000 post offices as branch outlets for members of the consortium, to be called the Link Group.

The Post Office is expected to announce before Christmas a huge national programme of counter automation, including installation of automatic teller machines (ATMs) operated by the banking arm of the Post Office, the National Girobank.

The Post Office is holding preliminary talks with the Link Group to work out how to set up a national open-shared network of ATMs at most of the 22,000 post offices.

But it is also planned to install ATMs at big shops and rail stations, so Girobank customers no longer have to join long queues at post offices to draw out money.

The Link Group includes the life assurance group Allied Hambro, the Abbey National and Sussex Building Societies, Western Trust & Savings, HFC Trust & Savings, and the world's biggest bank, Citibank.

The National Girobank was also a member, but it has pulled out to concentrate on the Post Office's counter automation plans, although it still has an agreement with the group.

All members of the group lack a national network of branches, and the Post Office is the obvious choice since there is little chance of sharing with the big four banks.

In the longer term, there is the possibility of the Post Office's counter terminals being used to offer services to the customers of banks and building societies, with members of the group connecting their computers.

But in the short term, it is the ATMs rather than the counter terminals that interest the Link Group, with NCR and Philips favourites to pick up most of the business.

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SPECTOR... "We are very close to defining a sic in the UK."

Apollo close to UK landing for its European assembly

by Robert Parry

US manufacturer of upmarket networked workstations Apollo Computer is close to setting up a European assembly operation. And the UK is tipped as the most likely location.

"By mid-1984 we will move into the EEC, with a manufacturing plant," said Apollo president and chief operating officer Charlie Spector. "The UK is leading. We are very close to defining a site in the UK."

Spector says that the operation would involve more than just local assembly of imported sub-assemblies. "We are looking towards software engineering, depot repair

and documentation production, as well as assembling kit."

Already Apollo's UK company is active with software companies, marrying up software with Apollo hardware.

The extent of the Software R&D activity in the UK was reflected in last week's Apollo Domain show in London, an exhibition showing off Apollo kit and the application software that can run on it. The show was Apollo's fourth - and the first outside the US.

The shows give Apollo and its system house customers a chance to show off the easy networking of the Domain system. At the London show there were 38 Domain

systems from the various exhibitors all linked into a single network, with the right packages running to design and launch a satellite, quipped UK managing director David Howes.

Meanwhile Apollo is looking strong on the financial front. It has just reported third quarter results for 1983, with sales up to \$52 million for the nine months compared to 1982's \$18 million for the whole year. This, tied to the recent clutch of new products that made good the promise of processor independence and that the network is sacred, according to Spector, has given the company a racy glow in investors' eyes.

'Robots protect jobs'

by our Parliamentary Correspondent

ROBOTS do not cut jobs, but protect job security, Trade and Industry under-secretary (EU) Butcher told the Commons last week.

Answering a question from Labour MP Dennis Skinner, Butcher said figures from a British Robot Association show a 61% increase in the UK's population to 1,152 by the end of 1982. He denied that there had been a corresponding job loss.

Experience suggested that robots improved competitiveness and thus increased job security, Butcher said. It was wrong to say new technology that was likely to lead to substantial job losses.

He added that in 1981 the number of robots per 10,000



people employed in manufacturing was 17.7 in Sweden, 8.7 in Japan, 2.8 in Germany, 2.5 in the US, and 1.2 in France and the UK.

In the Lords the Cable and Broadcasting Bill is expected to go a Second Reading this month. The Bill closely follows the provisions of the government's White Paper on cable television services.

Oakley answers neglect charges

by George Black

ALVEY Programme director Brian Oakley has answered criticisms that small businesses were being neglected in the national fifth generation effort.

He said he had no doubt that "small, innovative firms" would be involved in the five-year plan. Oakley promised that the consortia formed to develop the Alvey demonstrator projects would bring in small companies.

However, many small firms would not have a role to play, because they had "no particular expertise to offer".

The controversy was fuelled again in the Commons last week by Liberal trade and industry spokesman Paddy Ashdown.

Referring to the November 10 Computer Weekly story about software firms pressing for a fair share of the Alvey work, he asked Secretary of State for Trade and Industry Norman Tebbit whether he

would ensure the Alvey directorate included a small firms representative.

He was told by under-secretary John Butcher that Alvey directors were appointed for their expertise, not because they represented industry sectors. Butcher added that small firms were already doing Alvey work.

But Ashdown said later that he was "certainly not satisfied" with the reply.

"I will raise this again," he said. "I will say that the industry says this is nothing like satisfactory. It's always assumed that innovation only happens in big companies, but there's a lot going on in small firms."

Referring to the 50% ceiling on governmental grants to companies participating in Alvey, Oakley said that small, innovative companies would have no difficulty in attracting funding.

The directorate has had more

meetings with City finance firms, and there seems to be general agreement that a referral service for small firms, with an Alvey endorsement, may provide a solution to their capital raising problems.

The only area so far where Oakley has found the 50% limit to be a problem is with the development of formal methods for specifying systems design, where the payback is too long to attract investors.

The Alvey directors are to meet a deputation from the Computing Services Association early in the new year to discuss the role of small companies in Alvey, and some new proposals are likely to be put forward then.

A City financing deal may be one of them.

CSA secretary, Tony Lewis, said he was very encouraged by the directors' attitude to the CSA's request for a meeting, but a willingness to adapt was needed.



OAKLEY... "Small, innovative firm will be involved."

Mercury finds sites for dishes

by Nicola Moran

PRIVATE TELECOMUNICATIONS Mercury has announced it has found sites for UK and international links.

It has outlined planning permission to use East Wood Wharf in the London docklands container zone and Whitehall Quay in Tackley, Oxfordshire.

Two dishes will be installed on the docklands in an eight-metre antenna providing television distribution in the UK and a 13-metre installation for transatlantic television and digital communications services.

At the Whitehall site the first dish to be installed will be an 18-metre unit, which will provide communications capability to North America via the Intelsat Atlantic region satellite.

Sandy Skinner, Mercury's managing communications manager, said: "We are having constructive discussions with BT and we have also talked to other carriers, including IRI, RTI and Graphnet, about their taking traffic from Mercury."

Plessey invests £50m in gallium arsenide

by Dave Madden

PLESSEY has set up a new subsidiary in an effort to lead the world in gallium arsenide technology.

It will invest £50 million in the company, Plessey Three-Five Group, over the next five years. About £25 million will be spent on continuing work at Plessey's research centre at Caswell, and the remainder will go towards developing manufacturing capacity to exploit that research.

Plessey expects the group to employ "several hundred people" by 1987.

Dr John Bass, Plessey's director of research, said the company has four gallium arsenide processes

going into pilot production now. It will be shipping samples to both internal and external customers, including US firms early in 1984.

Bass said that the gallium arsenide circuits were destined for "radar applications and use in the linear circuit field."

Plessey's interest in gallium arsenide as a practical alternative to silicon as a semiconductor material goes back to 1962, and the Caswell centre claims to have produced the first microwave circuit in gallium arsenide in 1974.

This latest investment springs from the conviction that gallium arsenide is set to take off in civilian applications, as well as more traditional military markets.

OECD calls for action on data flows

by Rory Johnston

URGENT action is required to secure international agreements on how data flows may be regulated if business activity worldwide is not to be seriously harmed. That was the message that emerged from the conference on Transborder Data Flow held in London last week by the Organisation for Economic Co-operation and Development, the club of the Western world's major industrial powers.

More and more countries, the conference was told, were trying to impose restrictions on international data flows for reasons of economic protectionism, national sovereignty, revenue raising, protection of secrets and even international politics.

If an international agreement was not reached soon, economic activity would be substantially dampened and everyone would be

the loser, it was said.

James Grant of the Royal Bank of Canada criticised the efforts of his government to protect the Canadian DP industry by restricting the use of computer services across the border in the US, and in compelling foreign banks to keep records in Canada, incurring much extra expense. Such action could only lead to retaliation, which could block Canadian firms' access to the latest technology, which they needed in order to compete.

An international agreement could be worked out, Grant insisted, that would among other things allow Canadian government bank inspectors to access records, even if they were held in a computer in the US.

It was especially important to reach agreement to prevent a recurrence of what happened to Dresde Industries at the time of

the crisis over the Soviet gas pipeline, Grant said. The US State Department stopped the company's French subsidiary from getting access to the corporate database in the US, through which all its day-to-day operations normally went, so the firm was paralysed.

Another major concern of the conference was clearing up jurisdiction over computer crime. Justice Michael Kirby of Australia said it was still not clear where a criminal could be prosecuted when he operated a terminal in one country to transfer funds dishonestly between bank accounts in second and third countries.

There were also tricky problems of jurisdiction, he said, for example if a Norwegian accessed an American database under US Freedom of Information laws and obtained data that was a state secret in Norway.

De-regulation of telecommunications in the UK and the US was also beginning to raise major problems, according to Hans Peter Gassmann, head of the OECD computer section. While the UK and US were relaxing their monopolies, other European countries were growing increasingly unhappy with having to deal with a host of small companies instead of one monolithic organisation.

Multinational companies setting up global networks would want to put the same or compatible equipment at all their nodes, but would find that some countries would only allow kit of their own specification to be attached to lines, said Johan Martin-Lof, chairman of the OECD computers committee.

International standards in this area were "an absolute necessity for business," he declared.

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XA to be offered by most PCMs

by Philip Hunter

MOST plug compatible manufacturers (PCMs) will be able to offer users extended architecture (XA) by April 1984, a year after IBM made its own announcement.

Latest to follow IBM is National Advanced Systems, which sells mainframes made by Hitachi. It says that it will be able to ship a conversion kit to XA in April 1984, before Hitachi itself makes XA available in Japan.

Most NAS users will receive kits free of charge as agreed in existing contracts, but some will have to pay \$250,000 for them.



CURRAN... "Not lost too much ground."

Sale of C&W shares is government flop

by Dave Madden

THE government came unstuck last week in its sale of Cable & Wireless shares.

When the application list closed for the 100 million shares - offered for sale by tender at a minimum tender price of 275 pence - only 70% of the offer was subscribed. The balance was left with the underwriters.

So subscribers will get their allocations in full, at 275 pence. At that price the government will net £262 million from the sale.

The response has clearly taken the government and its advisers by surprise. They went for a tender method because of the outstanding precedent set by the recent BP sell-off. But even the innovation of advertising the sale on television has not removed fundamental suspicions about Cable & Wireless' involvement in Hong Kong and the Mercury consortium.

On the eve of closure of applications, Kleinwort Benson, the merchant bank leading the issue, and its brokers were still reporting considerable interest from both private and institutional investors.

Those same investors seemed to lose enthusiasm for the sale only when it came to signing the cheques.

But one spokesman for Cable & Wireless said: "Privately I wasn't surprised, the last few days have been nothing like the mad house we had first time round."

It may be that the government's initial sale of 50.1% of Cable & Wireless in October was too close to create much interest in the company this time.

A spokesman for Morgan Grenfell, one of the underwriting banks, commented: "We are disappointed, but I have no explanation yet. We expected the issue to be subscribed. Of course, the offer for sale was not so long ago, and there has been general concern about Hong Kong."

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Dundee... new work for NCR's banking centre.

NCR wins \$75m Euro bank order

by John Kavanagh

A \$75 million order has brought NCR its biggest contract in Europe, giving it over 50% of the Norwegian banking market at the expense of European suppliers and bringing new work to factories in Dundee and Germany.

The order is from Fellesdata Data Centre, which serves 190 Norwegian savings banks, and Den Norske Credit Bank, the country's main commercial bank. These organisations currently use ICL and Philips equipment.

NCR's Dundee factory will supply 600 of the new 5080 self-service auto-teller machines and 1,700 Tower 1632 computers

based on the Motorola 16/32-bit processor and running the Unix operating system.

In addition, the German factory will provide 3,000 of the eight/16-bit Decision Mate V microcomputers.

The order also includes 4,500 of NCR's Series 5000 financial terminals and 2,500 Worksave word processors.

The Towers will act as regional controllers for the terminals, while the Decision Mates will be installed in branches.

The banks say NCR was chosen because of its commitments to international communications standards. Fellesdata runs a central

IBM mainframe - and NCR makes much of the fact that its CNA network architecture is compatible with IBM's SNA.

"We hope this success will spill over into Sweden and Denmark," said Jim Adamson, manager of the Dundee factory. "There are some big contracts coming up there."

He added that the plant was taking on people steadily. The research and development staff had been increased by 50% to 155 in the last 18 months. The production workforce is 950.

The success of the Decision Mate V has created over 300 jobs at the German factory in the last year.

French buy \$6m stake in Comserv

by George Black

US manufacturing software company Comserv is to sell 20% of its stock to a French firm for around \$6 million.

Comserv president Richard Daley said there was an agreement in principle with Sema-Metra, software subsidiary of the Bank of Paris, for it to buy 850,000 shares. He hoped the deal would be signed by the beginning of next year.

The two companies plan to set up a joint venture which could give

Comserv an entry into Europe, and lead to French, German and Spanish language versions of its AMAPS manufacturing resource planning suite.

The new company is intended to take in all of Comserv's existing European staff, and some from Sema-Metra, a total of around 25 employees. They will be led by Comserv's international vice-president, Stuart McIntosh.

Sema-Metra is a \$100 million operation designing systems all over

the world, including IBM and HP-based manufacturing installations. Its strong presence on the Continent could provide the platform for expansion that Comserv has been seeking since the beginning of the year.

So far Comserv has achieved 30 to 35 sales of its AMAPS mainframe package in Europe, but it feels the French alliance could help accelerate expansion into Europe. Last year its worldwide sales were \$25 million.

Small telecomms firms form group

by George Black

A NEW group has been set up to lobby for a fair deal for smaller companies in competition with British Telecom.

The Association of Telecommunications Services is a fledgling pressure group aiming to protect its members' interests in the framing of legislation for both British Telecom and its private rival Mercury.

Ascom, as it calls itself, supports the creation of Mercury - not surprisingly, as Cable & Wireless, Mercury's parent, is one of its founders - but opposes the government's intention to retain a "duopoly" for the next seven years.

"Kenneth Baker's official statement of intent on this is in direct contradiction to his government's policy of liberalisation," said Ascom chairman Michael Wolff. He also wants the system of licensing for value added services abolished.

The association comprises Cable & Wireless, Air Call and its new acquisition CCI, Lydiastar, BFT Communications and British Monomarks.

Cable's value-added services

division manager, John Carroll, said BT should not be allowed to subsidise VANS out of its international operations profits.

He feared that the Office of Telecommunications would not have the teeth to be able to police the market adequately.

"The rest of us are fleas compared to the elephant of BT - we get 3% to its 97%," said Carroll.

"Ofset must have enough accountants, engineers and managers to be able to resolve cases quickly. If BT is not regulated it could start a price war which would force all its rivals out - and that is not what the government wanted."

Cable & Wireless has not declared itself in favour of splitting up BT, but there is likely to be feeling within Ascom that this may be the only way of ensuring the survival of its members.

Meanwhile C&W is gearing up for a £20 million-plus investment in VANS over the next three years and expects to take on 250 people. Another key man in the programme will be Peter Moulson, a former senior civil servant at the Industry Department recruited to head the C&W "fair deal" lobby.

IBM and BT deny joint banking deal

by Donald Kennett

THE banks are in talks with IBM and British Telecom for the plastic money (EFT/Pos) network the banks want to build by 1986, said the Banking Information Service last week. But there is no question of a joint proposal from the two.

Since the Committee of London Clearing Bankers (CLCB) group announced plans for the network in May, there has been speculation that IBM and BT were undertaking a major joint venture, possibly involving some sort of network management. Last week, IBM reaffirmed its keenness to make such partnerships with telecommunications suppliers at a Financial Times conference (see page 4).

But a spokesman for the Banking Information Service said the banks were involved in discussions with both IBM and BT and that their proposals might involve a degree of co-operation between them.

Plans are still at a very early stage, however. There are no firm proposals and no decisions have been made about suppliers. And there is certainly no joint proposal from IBM and BT.

One decision that has been made since May is that EFT/Pos terminals will be supplied competitively by manufacturers working to standards published by CLCB and bought by banks and retailers individually, rather than by central purchase for the whole scheme. Figures for the network are 100,000 terminals and 1,000 access nodes initially.

Decisions on cost, speed, security and capacity for future expansion have yet to be made, and the dividing line between the network itself and the services that banks provide over it is still not clear. Neither are the arrangements for the funding, ownership and management of the network.

There is still a question mark concerning legal liabilities that may be incurred by card issuers.

ISO soon to get APL comments

COMMENTS on the draft standard for the APL language will be sent to the International Standards Organisation after the end of January. Copies of the draft are being circulated by Paul Barrow, IBM Portsmouth to UK experts. The British Standards Institution intends to adopt the ISO specification.

Cut-throat field

THE microcomputer market is too cut-throat, says UK firm Data Type, which has dropped Teeco personal computers. The company says dealers do not pay and the market is too crowded. Dealer goes to the credit limit, one distributor, then none, another while delaying payment the first," said sales manager Richardson. Data Type will continue selling Teeco terminals.

MBS takes over

DEC terminal supplier Business Systems has agreed to acquire Alveronic Computer Systems of Hull, a DEC authorised computer distributor and maintenance company. MBS will issue new shares worth £1 million to Alveronic, who forecasts turnover of £2.5 million to September 1983. Alveronic make up about 15% of the enlarged equity.

Trophy winners

TROPHIES aimed at encouraging the UK technology industry to be presented at the new Technology exhibition in February. The awards are sponsored by Bank, Bank, the Confederation of British Industry, the Institute of Patent and Inventors, the British Technology Group and the Department of Trade and Industry. Award classes include inventor of the year, technology transfer and technology marketing.

Mail access

USERS of the IBM-PC can now access the Micromail electronic mail service launched in July by ACT and British Telecom. Initially aimed at users of the IBM and Apricot micros, the service consists of modem cards and software to enable micro users to access Telecom Gold's Data mailbox computer. It is available as a single sourced package from ACT.

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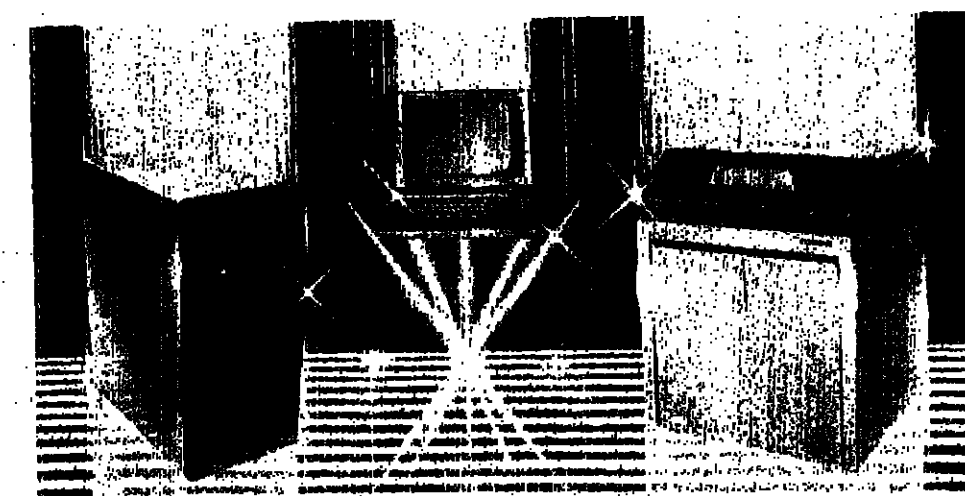
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REID... Two-year project to convert speech into digital form and back again.

Work on chip to recognise speech

by Philip Hunter

AN Australian computer scientist is developing a prototype speech processing chip that could lead to much improved performance from speech recognition products. At present speech recognition is reliable only with small vocabularies - less than about 100 words - and even then the machine has to be trained to just one speaker.

Dr John Reid is at the first stage of a £400,000 two-year project to build a prototype voice scrambler, or vocoder, to convert speech into digital form and back again.

The key to what Reid hopes will be a much more powerful product than existing ones is a dedicated chip incorporating the highly specialised mathematical formulas, or algorithms, used in decoding speech and matching the spoken word with the stored version.

No existing speech recognition product uses a dedicated chip, although Texas Instruments offers

an add-on board to its Professional Computer for speech recognition, which uses its TME 320 signal processing chip.

This chip is partially dedicated to speech recognition, but is used for other signal processing applications as well.

Even so the development has enabled TI to cut the price of speech recognition below the previous common level of £10,000. The board costs just \$2,600.

The speaker has 50 choices of word at any time, and the machine can recognise short sequences of words so long as each one is clearly articulated, with a pause between each word.

In the UK, Logica and Marconi offer products based on older technology, dedicated hardware using conventional chips.

Logica offers a box at £15,000 which can store 120 words, with an active vocabulary of 25 words. Marconi can do better - its SR128

costs £9,860 and offers an active vocabulary of 100 words.

Logica's Logos is used in airports, an application needing small vocabulary but high accuracy. And Marconi's SR128 has been used for over a year by the Royal Aircraft Establishment, which reports that the product has an error rate of under 2%.

There is a limit to how much improvement in vocabulary can be achieved by using dedicated processors, and in the long run new algorithms will have to be developed that can break down speech into its basic sound elements.

The National Physical Laboratory is researching a long-term goal. Ralph Rogers, a member of the speech recognition team, says the NPL is investigating the possibility of using a computer to extract the basic building blocks of words.

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DG offers pay as you sell deal

by Philip Hunter

DATA GENERAL plans to launch in the New Year a dealer programme for its Desktop Generation micros with a new flavour - dealers will only pay the company for a machine when an end user buys it.

Normally dealers have to estimate demand and place a volume order with the manufacturer, with payment up front.

DG has already stepped out of line in the US by handing machines out to its newly-appointed dealers for the micro without asking for immediate payment.

Data General's UK distribution manager Colin Milner hints that the UK will follow the US lead, although the programme is not yet complete. The response in the US has so far been good and the aim is to implement the best parts of the US programme in the UK, he says.

Milner warns potential dealers not to treat the new scheme as an easy pickings, with the prospect of avoiding the usual commercial risks.

"It's not going to be easy to become a DG dealer," he says. "We are not intending to go out and



MILNER... "Not easy to become a DG dealer."

sign up as many dealers as possible. DG at present has about 70 line OEMs selling its microcomputers. These OEMs could qualify to become dealers for the micros under the new scheme, but they will not be given preferential treatment, says Milner.

There are four models in the Desktop range, the models 20 and 30 driven by DG's own micro-Eclipse chips and, of more interest to dealers, the models 10 and 15 which are dual processor machines with the Intel 8086 and the microEclipse.

£250,000 cash for chip connector

A UK firm, Ultra Electronic Components, is out to change the face of basic computer building blocks. It has invested £250,000 in research on the Chip Rack, a compact chip connecting system developed by Dave Brown and Mike Ansley, partners in Wokingham-based ICDC. Prototype applications will appear early in 1984.

But an approach by Brown to the British Technology Group for funding the project got nowhere. Brown was told more development was needed.

The idea is to do away with all the leads of conventional circuit boards and lay out the chips in carriers with conductive strips linking each chip. The carriers are double-sided and mounted in racks to give a three-dimensional structure which offers vast potential performance improvements.

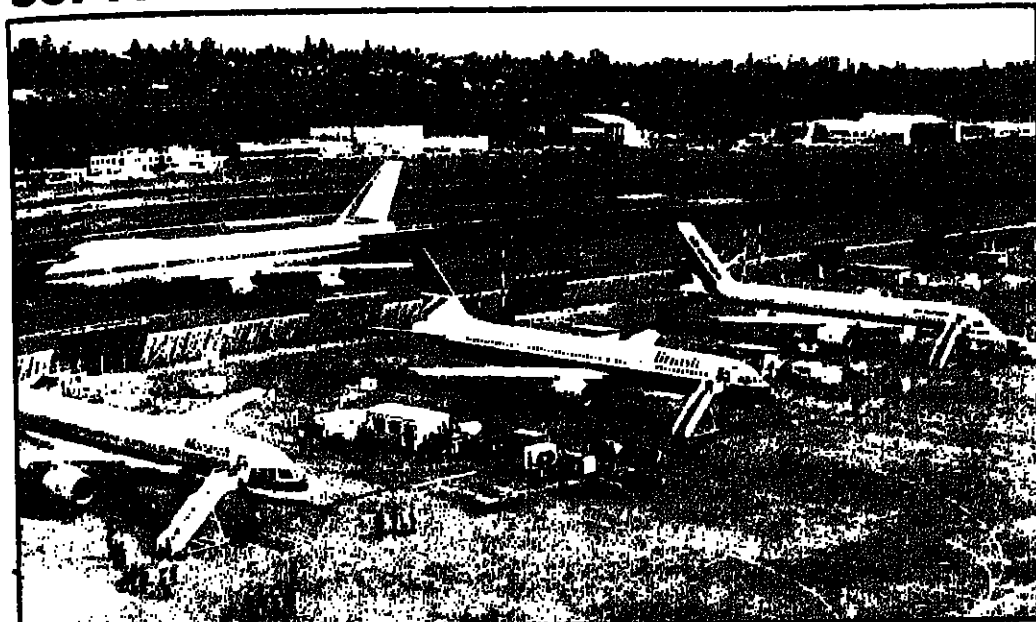
PC clones for £1,000 in UK

CLONES of the IBM Personal Computer could become available for about £1,000 following the launch in the UK of an IBM-compatible board based around the Intel 8088 processor. The board, made by Faraday Electronics of Palo Alto, California, is being marketed to OEMs in the UK by Micro Marketing Electronics (MME) at a single unit price of £500.

MME says it should be possible for an OEM to add a keyboard, monitor, disc drive and power supply for another £500 to yield an IBM PC work-alike for £1,000.

But the company thinks the main market for this kind of PC will be in industrial control rather than in building PCs. "There are enough IBM compatible machines already," says MME sales and marketing manager John Hooper.

SOFTWARE FILE



Boeing Computer Services, part of the jet engine maker, is moving into new markets.

Boeing migrates to micro packages with PC suite

BOEING Computer Services, the jet engine maker's subsidiary, is going into package micro software.

Its announcement of a range of products for the IBM-PC marks the latest step in the migration of bureaux and consultancy firms towards newer and more fertile markets. Boeing's engineering and IBM services have continued to prosper, but its traditional time-sharing operating has been in decline, as the cost arguments in favour of in-house systems have become overwhelming.

Now the Boeing services company's European arm, based at Watford, has brought over to the UK marketplace a suite developed

at its Seattle headquarters claimed to be the most comprehensive and flexible yet offered for the PC.

It originated with a brief to the computing arm by Boeing top management in the late 1970s to put some order into the spreading anarchy of IBM and Univac mainframes, DEC minis and newly-emerging micros.

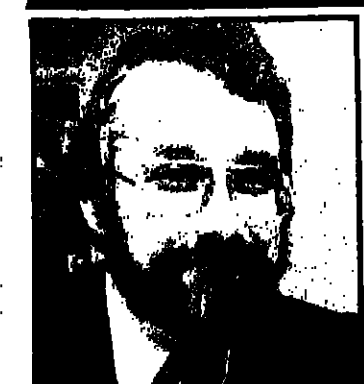
They then standardised on the UCSD p-code portable operating system and developed their own version of it called BOTS, or Boeing Intelligent Terminal System.

From this came the new family of software for various scientific, commercial and engineering tasks.

Manager George Macleod is particularly proud of its relational database and its computer-based instrumentation system. It has been sold in the US on a number of micros, including DEC, Xerox and Onyx, but here is only to be made available on IBM-PCs.

Macleod thinks the main appeal will be to large companies prepared to spend money to gain a standard as Boeing has, rather than to small businesses.

"It's these big companies which have the problem with IBM-PCs springing up everywhere, and the DP manager trying to get his arms round the situation," said Macleod.



TEBBUTT... "It helps you gather your wits."

Brainstorm in ideas processing

IF artificial intelligence is the London to Manchester road, Caxton Software has reached Harrow - or maybe Watford. So says director David Tebbutt, making only modest claims for his Brainstorm package.

He devised it to help himself in making jottings and then be able to review his notes in comprehensible form.

"It helps you gather your wits, however difficult you may have put things down," he said.

With the aid of freelance programmer Mike Liardet - formerly of Edinburgh University AI department and one of the developers of Caxton's Optimiser software - he turned the machine code he has used himself into a package for the commercial world. The first version runs on any micro supporting the CPM operating system.

"We think it should allow any manager or systems designer to get his head around a subject. We've shown our faith in it by giving it to our sister company Digitus, which has been using it successfully."

Tebbutt said he had set out with the academic intention of writing a program to mimic the workings of the human brain, but admitted he has not got far. Then he decided it was time to get on with it.

Compiler provides DEC-DG portability

A BRIDGE between DEC and Data General hardware has been devised by a small London specialist programming house with big commercial ambitions.

It is a compiler for DEC PDP-11 minis and Professional micros which takes Data General CS Cobol source code and generates DEC object code.

The author is Tony Sale, chairman of the British Computer Society's Cobol group, who has developed the compiler for Angus Glow, a five-year-old systems outfit.

The impetus came from Information Access Inc in Ohio, which wanted to port one of its successful applications running at 400 Data General sites on to DEC

equipment, as it had just become a DEC OEM. Re-writing the application into DEC Cobol or Basic would have proved a massive task.

"We have created a tool that gives portability between DEC and DG and should be invaluable in allowing authors to sell the same software for both ranges of machinery," said Angus marketing director Leo Scheiner. "We don't know of any similar aid in existence."

Scheiner thinks the system could be a big boost for the Professional micros, which despite its high reputation for power still has relatively few applications available. DG suites could now be simply recompiled to run on the Professional he said.

Concurrent windows

VERSION 3.1 of Digital Research's Concurrent CPM operating system, due for release in March, is to have windowing capabilities.

The upgrade, announced at the Comdex show in Las Vegas last week and simultaneously in the UK, pushes the system into the

field of multi-user networking.

The windowing technique lets users see four applications executing at once. Digital's European operations manager Paul Bailey said this was not the same as VIP, the Visual Information Processor, previewed in CW on August 18. But it could complement VIP.

Software File is compiled by George Black

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Users give IBM a low software rating

by Philip Hunter

IBM has a low rating as a software supplier among its users. It has come last but one out of 21 major suppliers on value for money, and last but two on quality, in a survey* of 163 IBM mainframe sites in the UK.

This view is confirmed by John Grant, chairman of the IBM Computer Users' Association. But he added: "We are expecting IBM to be more competitive than at the moment."

Grant says the CUA is concerned about IBM's recent move to start charging users for upgrades of existing IBM software.

"We are not opposed to an upgrade charge as such," he says, "but we need to monitor the amount carefully."

Users renting software should expect a discount if they have to pay for upgrades, he adds.

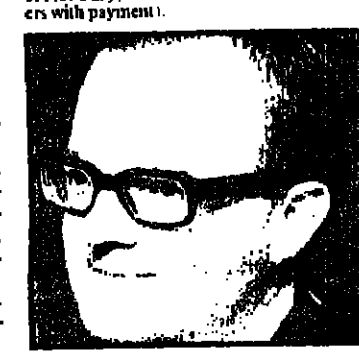
But the poor reputation of IBM software does not stop users buying it. More than half of the software budget was spent with IBM at 151 of the 163 sites in the survey; the average was about 75%.

The main reason given for preferring IBM software was fear about future compatibility. IBM's increasing refusal to publish source code was having the

intended effect of preventing independent suppliers keeping their code compatible with IBM's. Users in the survey said they were worried that IBM's policy of not publishing source code would hurt the UK's independent software suppliers.

But Grant is sympathetic with IBM's position on software source code. "There was a lot of copying of IBM software," he says.

Compute of Bridgend is the software supplier offering best value for money, according to the survey. "The Xpion Market Survey Systems Software: Acquisition and Usage, from Nephron of Newbury, Berkshire. £29.95 for orders with payment."



GRANT... "We are expecting IBM to be more competitive."

Bank silent on 'sell-off' in Ulster

SUGGESTIONS of a proposed sale of three National Westminster subsidiaries, Software Ireland, Computer Maintenance Ireland and ICS Computing, to Northern Ireland corporation Lament, was met with a firm "no comment" by the parties involved this week.

Range complete

TELEIRA Business Systems of High Wycombe has completed its range of commercial applications for the Unix operating environment, says software director Sean Dowling. The Tetraplan suite, running on micros or minis, comprises accounting, order processing, inventory, sales analysis and stock control.

Prospero update

LONDON software house Prospero has re-written its 8-bit Pascal compiler for 16-bit machines. The new 16-bit version, aimed at MS-DOS operating systems micros, is compatible with its predecessor running under CPM, says Prospero director Mike Oakes.

Planning system

MANAGEMENT consultant DeLoite, Haskins and Sells has developed a planning package for manufacturing industry running on the IBM-PC, called CostPlan. It began as a project for dyers Cawley, of the Rexam Group, for its annual budgeting.

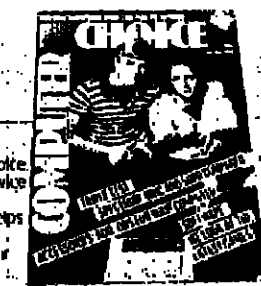
Housing match

LONDON systems house Fraser Williams has extended its estate agency software range with a set of programs to match applicants to properties available. Fraser Williams has over 40 installations of the suite in the UK abroad, running on Data General hardware.

Until now, finding out about home computers was about as simple as

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PROFILE

Boss who understands the problems of users

FRANK WALTERS, managing director of Harris Corporation's UK operations, appreciates the typical problems that users have. He also understands field engineering, hardware, software and running small and large companies.

Over the last 27 years Walters has had experience in all those areas, which he believes is now standing him in good stead as Harris Corp adopts an increasingly visible profile.

by John Riley

After leaving national service in 1956, he joined Joe Lyons as a computer systems field engineer. "That was in the days of mercury delay lines, radio valves, 150 milliseconds access, and so on," he reflects.

After about four years there, he moved to become one of Honeywell UK's first five field engineers. "We worked with the 400 and 800 machines," he says, "and there was more mystique about computing in those days - including the white coats."

While at Honeywell he moved over to software - "linking around with programs" - before leaving in 1965 to become DP manager of Standard Telephone and Cables' telephone switching group.

"I went there for three months and stayed for five years," he says. It was there that he experienced the industry as a user. "It's easy to be inquisitive if you've never been a user," he says, "getting the work out and the job done on time, with people unsympathetic to hardware and software problems."

In 1969 he went back to Honeywell. As STC was a large Honeywell user he found that he had not lost touch, and went into selling in the North-West.

By the end of 1972 he had found it time to move on. "A problem of



WALTERS... "There was more mystique in those days."

large companies is that they want to influence decisions and I wanted to be my own master," he says. He moved from there to Facit Data Solve and into the small business systems market. "That was a different marketplace," he says, "dealing with a wide range of customers from green grocers to medium sized companies."

After a spell there, he moved across the market to minicomputer manufacturer Varian Associates as UK general manager.

"At Varian I felt more in control of my own destiny," he says. But when Varian was bought out in the summer of 1977 by Sperry, Walters found himself back where he had started - in a large company

so after six months as Sperry's UK minicomputer sales director, he left to become managing director of mini manufacturer General Automation.

"People don't realise that there are problems when a smaller organisation is taken over by a larger one. The smaller company usually slots in lower down. Varian had 30 staff, and it was traumatic when it was taken over - it was hardly a pin-prick in the larger corporation," he explains.

Walters is conscious of the problems of other companies that he has seen taken over in his career which have "nearly died in the dichotomy of interest between those who take over and those who

control them". He emphasises that Harris understands this problem, and explains that after Harris took over the communications company, Farinon, in 1980 it remained a separate company for a year or so, "until they got to know each other," he adds. "Then we split it up. When you take over a small company it feels very insecure."

He points out that there are also problems when equal sized companies merge. "Of course, when you get a power play problem."

After nearly three years at General Automation, during which time he became joint manager of European operations, Walters was approached by Harris and became its UK general manager, international division.

"Harris appealed because as well as being a \$1.7 billion company, it covers a lot of areas - satellites, distributed data processing, semiconductors and terminals - and I felt I could grow inside it."

Harris aims at larger users, starting with the 30-40 terminal users upwards. "The Harris approach is to have tremendous rapport with large IBM users," he says, "and we sell plug-compatible equipment to them."

"We're very fortunate in the industry to have a large umbrella organisation like IBM. It takes 70% of the world market, which gives you a de facto standard."

Walters believes that the main thrust of the future has to come through marketing. That is one reason why Harris has taken over the word processing and micro manufacturer, Lanier, which is to be left intact as a separate section of Harris. It has a widespread marketing organisation.

"The hardware is easy," says Walters, "but people are the problem. Anyone can cobble together a chip and memory - but then you have to sell it."

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PLATFORM

Peter Curtis is executive director of Data Training.

Training suppliers should make the choices

A RECENT article by George Black (*Computer Weekly*, November 10) made public major elements of dissent between the controlling body and the public and private suppliers of training, leading to the industry recognised National Computing Centre certificate.

Currently about 1,000 analysts gain the qualification annually. Data Training is a major supplier, with a significant 180-200 attending scheduled courses each year. From this platform we are in a position to speak with authority for the suppliers.

There is to be a new examination syllabus concentrating on structured analysis and design replacing totally conventional systems development techniques within 12 months.

However, this decision pre-empted meaningful discussion with the suppliers and imposes an industry standard, market requirements and a required timescale without consultation.

The "row" started at a meeting called by the NCC and attended by training suppliers. Most suppliers attended, having erroneously interpreted that suppliers' views would be encouraged. The meeting, however, presented the syllabus as a fait accompli, and challenges arising from the floor were neither welcomed nor considered.

The major objections raised at the meeting were the absence of a proper investigation of market requirements to establish user acceptance of the structured technology, and the optimum timescale for introducing it as a standard; the many variations of the structured approach - the recommended standard has not been defined and the associated course material has not been made available for scrutiny by the suppliers; the arbitrary timescale for the implementation of the new syllabus; that there should be the option to continue traditional examinations; that structured methods have not yet been accepted by most large commercial users as the intended approach to systems analysis and design; and the presentation of a decision to suppliers without consultation.

The introduction of the syllabus and material for teaching systems analysis and design in the late 1960s has often been described as the most valuable NCC contribution to our industry. Standards were defined for carrying out activities involved in analysis and design, where there were virtually none, and a designed training produced for the specific use of organisations wishing to provide formal training to new (and sometimes very experienced) analysts.

There was also an examination structure that could be meaningful to employers and would monitor the effectiveness of the presenters. It is inconceivable that the thousands of users who have spent the last decade establishing systems analysis and design working practices based on the traditional NCC approach will make the transition to the new methods by

December 1984.

In the meantime, there will be continuing requirements for replacement analysis in the traditional methods.

The half-way house solution, presenting sessions on structured methods as introductory exercises while practical work is carried out on conventional standards - suggested by the Systems Examination Board - is a far cry from the structured approach.

Data Training currently offers structured systems analysis, design (SSAD) to complete basic skills, but certainly not instead of them, nor to be used in isolation.

Heaven help the poor man who returns from SSAD to his own traditionally organised departments. Having thorough, learned co-ordinated, consistent structured methods leading to validated results, they will find these do not integrate with existing team practices.

However, it is only fair to state that the tools of SSAD evolved over past years at different speeds and from different sources. In consequence, there is considerable variance in the relative importance attached to the various elements, and there are great discrepancies in the methodologies being proposed.

If the final standard settled by the examination board puts together the technology from disparate views being advanced by prolific special interest groups,

Most suppliers recognise the advantages of the structured approach

then it will have provided a major service and accelerated the move to an industry standard.

Data Training is convinced by this general consensus is enough and that a common, well defined logical process is being revealed. Only when the professional departments themselves to these methods really start to produce significant management and user benefits associated with the procedures.

Although there is resistance to the introduction of the new syllabus, this is largely a question of definition and timescale. Most suppliers recognise the advantages of the structured approach.

The most apparent solution, and probably the easiest to implement, is for the board to extend the timescale for examining current taught to traditional standards, allowing employers and suppliers to make the choice relevant to their working standards.

The larger suppliers will make this choice of training more effectively, and if the method proves to be effective as claimed, they will voluntarily achieve the results the examining board seeks in its purpose on our industry.

Peter Curtis

10 YEARS AGO

FROM COMPUTER WEEKLY OF DECEMBER 6, 1973: Long was a software development contract as part of the World Weather Watch system run by the Meteorological Organisation. . . . The Instrument Co introduced a printer with 30% smaller characters, . . . participation of international paper shortage. . . . The kidney-machine service of the South-western Regional Hospital Board treated 1,000 kidneys from donors and matched them to potential recipients in 22 months.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, December 8, 1983

The tests to come for ICL

ICL has come a long way since the dark days of 1981, and its 1983 results have rightly been welcomed. But with the imminent retirement of Sir Christopher Laidlaw, the company will come under sceptical scrutiny again.

Two years ago circumstances demanded that ICL set itself modest, but crucial, objectives. Putting profits before growth, the Laidlaw-Wilmot team proceeded to cut borrowings and streamline the business. The latest figures show that in these terms they have succeeded.

Yet the message from Putney last week was a cautious one. ICL is first to recognise that the real tests of winning credibility in world markets, and taking on a fiercely competitive IBM at home - particularly in public sector contracts - are still to come.

What both City and industry commentators fear is that two years of expediency, producing albeit creditable short-term results, will be at a cost of growth in the foreseeable future.

It is easy to kick ICL, and the boot went in firmly at the weekend. But the company remains our one native main-frame maker, and its fate is important to the UK computer industry as a whole.

Where ICL has made progress is in re-positioning itself down market. The Distributed Resource System products now constitute 20% of hardware shipments, and the range looks set to be a sound bread and butter product for the next couple of years. And the company still has faith in Perq, to the extent that it took an option on 16% of Perq Systems Corp in September.

So with IBM flirting with British Telecom, it looks as if ICL still has the hard work to do. Growth must now come from improved turnover, and winning business. All the cuts are made.

Michael Edwardes arrives as deputy chairman of the company on January 1. There seems to be no reason why he should not produce an effective partnership with Robb Wilmot, and his appointment seems to have given ICL managers no little confidence. He is likely to preside over no less fundamental a phase of ICL's recovery than did his predecessor.

Blandness as virtue

WHAT is probably the most important of the Alvey Programme strategy documents is published this week. Of the four enabling technologies - VLSI, man machine interface, knowledge-based systems and software engineering - chosen by Alvey for a five-year advance technology initiative, software engineering offers the greatest opportunities for the UK computer industry.

Alvey director Brian Oakley himself describes the document as appearing bland on the surface. And what is probably as important as what the strategy includes, is what is left out. Database development is one such area specifically cited by the report.

Blandness and lack of comprehensiveness must be seen as virtues in this case. The Alvey directorate is now getting down to serious business, and it is time for a practical, no-nonsense approach.

The directorate will no doubt be criticised by some for leaving out the particular areas the critics are working on. But as the strategy document says, the programme has finite resources, and these resources must be focused sharply where they will do most good.

Just how finite the resources are is brought into sharp relief when one looks at the budget: £65 million at 1983 prices for the five years of the software engineering project. The government share of that total is £38.3 million, which will be an extremely small price to pay if the programme comes anywhere near meeting its objectives.

Those concerned with the commercial aspect of Alvey will be glad to know that 30% of the budget will go towards exploitation. The directorate recognises that a key to the exploitation effort is the need to educate management that investment does pay off.

That may prove to be the most difficult job of all.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Ian Goodwill of Henley, Oxfordshire, who wins £5. An operating system directs the flow of information from one part of the computer to another.

LETTERS

Aim of the programmer

I WOULD like to endorse the views of Paul Higham (*Computer Weekly*, November 24, in that Trans-Basic may be compact but not exactly readable.

Going on to his comments, surely what is even more important is the efficiency of the program. I agree with Trans-Basic that less code in a program decreases the storage capacity for the source, but how about the overheads?

A small program is not necessarily the best, most efficient or the quickest program to run.

I would have thought that the aim of all programmers is to write an efficient program with emphasis on program clarity as well. What is the point of writing a program that is illegible, difficult to understand, and takes a lot of time to run?

How many times has a programmer picked up a piece of code for maintenance and spent hours laboriously constructing the logic and understanding what the program does? Quite often, I suspect.

BHARAT PORIA

Director
BCP Computer Consultants
Sutton, Surrey

An easy language

I MUST query Paul Higham's comment on the language Trans-Basic and the art of programming (*Computer Weekly*, November 24). It appears that the whole point of the article has been missed.

The original article discussed the language Trans-Basic, culminating with a comparison with Cobol. The point made was that Trans-Basic is easier to learn, easier and faster to program in, and easier to debug than Cobol, while still remaining compact. The program featured in the article of November 10 was produced by a divisional manager who has done little programming in recent years and was new to the Trans-Basic language.

It is unfortunate that some academics today appear to equate "structured" with "good". As a realist I believe that languages such as Trans-Basic fill an area where less qualified personnel can produce good, workable and maintainable programs. I am an experienced lecturer and have been disappointed to see graduates reaching the culmination of their degree course believing that a program must be both structured and beautiful before it may be considered acceptable.

I would not like to be seen to decry a structured, logical approach to a problem, but would point out that a program does not have to be written in a "structured language" to be "structured".

I welcome the move to Trans-Basic as an attempt to remove the mystique of the black art of computer programming and enter a world where ordinary people can use a real time system such as Opus-1 and produce workable, maintainable programs.

Computer Automation
Rickmansworth, Herts.

RON BUSHILL

CONGRATULATIONS on *Management Review*. It was high time the DP industry and senior management had a good, in-depth weekly product based magazine.

One small point: the article on printers, A Dull Necessity (November 10), stated that Triumph Adler's new printer, the 115400 needed to do four passes to generate letter quality print at 110 cpi. This is incorrect. Letter quality is achieved with only one pass.

MAX HOTOPOL
PR and advertising manager
Triumph Adler (UK)
London.

Mips, flops and bops

FURTHER to the discussion on mips and megaflops (*Computer Weekly*, November 24), those involved in image processing are often concerned with high throughput processors operating not on floating point data but on integer or most frequently byte data.

Hence megaflops, millions of floating point operations per second, are less relevant and a better unit is megabops, millions of byte operations per second.

In fact gigabop processors are already being built. Perhaps it only serves to demonstrate the impossibility of defining processor throughput with a single measure.

Aerospace Group
Logica
Cobham,
Surrey

PAUL REDSTONE
Consultant

Letter quality achieved with a single pass



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THE TELEVIDEO SUCCESS STORY
(CONT'D).

From the time it was founded, TeleVideo has combined the best innovations in technology, design and quality of manufacturing to bring you a superior terminal. Now with the new 924 we've built in comfort and productivity features that leave the other manufacturers in the dark.

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DOWNTIME

Spirit of Christmas goes graphic

A CALL to all despisers of commercialised Christmas: if you have tears to shed, prepare to shed them now. Who would have thought that after 2,000 years of man's insatiable desire to make a bit on the side, there could be any remaining festive horrors lying in wait to pounce?

But of course there is. And it comes to you courtesy of the BBC Micro.

Owners of the BBC Model B can

now buy computer Christmas cards. The maker's publicity blurb sets the scene.

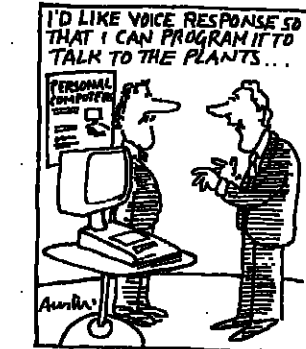
"Imagine the family's delight to



Reindeer and sleigh.

find an animated seasonal greeting on your television screen. An exciting addition to the usual Christmas decorations. Three fully-animated cards in colour with excellent festive music."

And so it goes on. I for one intend to eschew all puerile attempts to detract from the true spirit of Christmas and will instead pursue the more traditional means of celebration - overeating and drinking.



Chad

Taxing time

WHO said computers have no sense of humour? Me, probably. But there is hope. One of our metal chums, currently employed by the NatWest Bank, sent one of its customers a statement detailing the activities of its account.

Against an entry recording a transaction with the taxman, it added the phrase "Inland Revenue".

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Liveware File

by Don



DAD, I'M STUCK WITH THIS WARGAME. I KNOW WHAT SAY AND M.A.N. ARE... NOT TO MENTION C.N.B. AND M.T.R.V. BUT WHAT IS THE SIGNIFICANCE OF M.T.B.F.P?

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PEOPLE



■ **EMPLOYEES** at the New Southgate (North London) site of Standard Telephones and Cables were each to have received a gift from the company in celebration of STC's centenary this year. Instead, they chose to have the money, £25,000, used to buy an ultrasonic laser for the local Barnet General Hospital. Lynn Hinde, winner of the recent Miss STC New Southgate contest is seen handing a 3ft long replica of the cheque to the vice-chairman of Barnet Health Authority, Alan Ray.

■ Ferranti Ceteq has appointed two managers to the recently opened Wokingham office. Edwin Roberts to cover regional sales, and Terry Gardiner for export business development. Roberts was appointed in June to increase CAM-X exposure in the Southern region. He joined from Kongsberg Data Systems where he was product manager. Gardiner, who joined Ferranti in September, was previously marketing manager for McAuto (UK).

■ Prestel has strengthened its marketing team with appointments to two key positions. Peter Bailey is Prestel's new marketing manager, residential services. He comes from the record industry where he held marketing, sales and commercial management positions with three market leaders. Jim Odell, 34, is marketing manager, business services. He joins from the computer services industry, having held senior sales and marketing management positions for UIS, P&O, ICL and Baric. While with ICL he was responsible for the development and marketing of Bulletin, ICL's viewdata system.

■ Tech-Nel Data Products the Banbury-based manufacturer of data communications management systems, has appointed David Powell as technical support manager. Before joining Tech-Nel Data, he spent five years as senior engineer with Racal Milgo, based in Birmingham.



■ **John Waugh**, (above) has joined Kennedy and Donkin Systems Control, the independent systems engineers in computing and control, as marketing manager. Waugh, who was formerly senior venture manager with Atkins Research and Development (part of the WS Atkins Group), has 10 years' experience in the marketing and application of high technology products and systems.

■ **David Lamb**, has joined BIS Applied Systems as director of sales and marketing to develop customer relations. A chartered electrical engineer, Lamb has previously worked in government and manufacturing industry. He spent the last 10 years in management and marketing position in the computer services sector.

■ **Hardcopy** recording specialist Gould Bryans has set up its own direct selling operation in the North and has appointed Dave Freeman to lead the Northern operation covering Scotland and Ulster. With the title of Northern area sales engineer, he will be responsible for all aspects of recorder sales, including digital plotters as well as XY and galvanometric recorders in this area. Before joining Gould Bryans, Freeman was a sales engineer for machine tool and CAM products.

■ **Steve Hone** has joined MBS Personal Computers as a technical support specialist. He has spent the past 12 years in the RAF gaining experience on a variety of microprocessor-based systems used for flight simulation and communications.

■ Following the company's decision to expand in speech-related products, Cable and Wireless UK Services has appointed Michael Anns as product manager, speech-related products.

■ **Gary Wrenn** has joined Redifusion Computers as a dealer sales manager covering the South of England. He will sell the Teleputer/3 business terminal. Previously he was with Compak Computers 1981-1983 as sales director. Colin Mayes, who joined Redifusion Computers as analyst/programmer in the Finance and DP department, has spent five years as systems analyst with Pisons and, prior to that, 16 years with British Relay as an analyst.

■ **Icoms Computers** of Stoke-on-Trent has appointed Roland Bourne to the new position of software sales manager. He has 14 years' experience with a major clearing bank, specialising in branch re-organisation and is a consultant on the applications of microcomputers in education, industry and commerce.

■ Two new senior sales engineering appointments are announced by Rifa. William Chisholm has responsibilities for Northern England and Scotland, and Alan Walker's area covers Southern England. Both join from STC where they were product sales engineers.

■ **Geoff Cox** has been appointed finance director of systems house Software Sciences, which he joined in 1980 and, as group chief accountant, was responsible for financial accounting.

■ **Mini/micro software specialist** Duncan Branson Office Systems has appointed Tony Hughes development and support manager, responsible for sale support and the direction of the company's team of systems analysts and programmers. A new recruit to this team is Carole Brown, who joins as an analyst/programmer. Hughes was previously employed as a consultant analyst by Duncan Branson Software Systems, the City-based sister-company specialising in the IBM mainframe market and was formerly with Amida Systems.

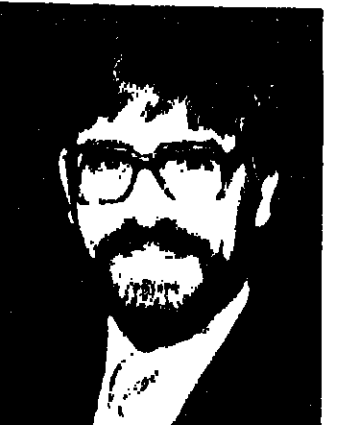
■ **Dicoll** Datasystems of Basingstoke, has announced two appointments to the board. Harry Duesbury has joined as sales director, and John Bowers has been appointed technical director. Duesbury trained as a computer engineer with ICL before moving to Univac on computer system sales. Joining Techexperts as European manager, he founded Techex and was the first managing director. Prior to joining Dicoll Datasystems he was for several years in the marine electronics industry, holding the position of sales director. Bowers was a computer engineer for several years with AEI and Honeywell, where he became project manager. Before moving to Dicoll Datasystems he founded Comco.



■ **Fred Humphreys** (above), has been appointed director of sales at AES Data (UK), strengthening the company's top management team and reflecting AES' continuing development in the office automation market.



■ **Ian Williams** (above) has been appointed sales marketing director of Paxton Computers which earlier this year became part of Star Computer Group. He joins Paxton from Star and in his new role will be responsible for bringing the Paxton Business Desk suite of microcomputer based applications packages to a wider market.



■ **Arthur L. Wells** (above) has joined computer-aided maintenance management specialist Comac Systems as a director with special responsibility for the company's newly established consultancy and training division.

■ **Percom**, a software company which recently attracted funds of nearly £500,000 largely through funding from the NEC and ITC, has announced its senior management team for the marketing and further development of its micro-based personnel management systems. Richard Coon, the managing director, in 1981 set up RDL Associates, a business start-up consultancy, and since then has been involved in a number of major projects for Rank Xerox including the formation of Xanadu, an association for the self-employed businessman. Geoff Lancashire, technical director, was previously with Rank Xerox as information systems manager John Angel, marketing director, is a solicitor and prior to forming Percom, acted as a consultant to Industrial Relations Services.

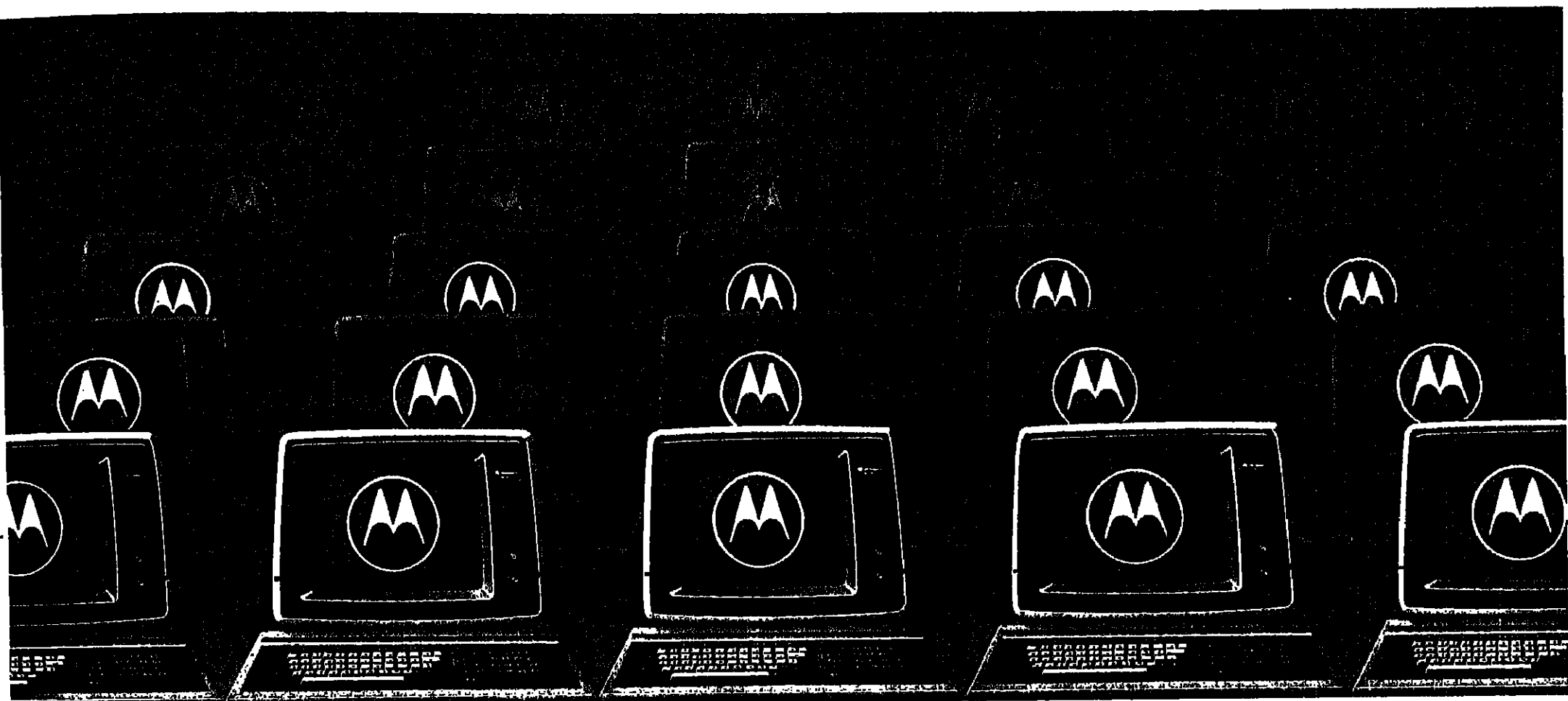
■ **Scan-Optics** of Sunbury, Middlesex, has appointed John Woods as director and general manager. He was previously international sales manager for Computer Automation.

DIARY

DECEMBER 8
IDMS and Data Dictionary. BCS Birmingham branch. Murray Kennedy, West Midlands Gas Board, Strathallan Hotel, Birmingham, 6.30pm.
Visit to Case new automated plant Watford Business Park. Peter Greaves, 01-580 2355.
DECEMBER 9
Design of Database Controls. BCS Auditing by Computer Specialist Group, London Press Centre.
Introduction to dBase II. Ctec course. Clerkenwell Road, London EC1 centre. Details from Richard Lee on 01-251 4010.
The IBM Personal Computer. Visit to IBM Welwyn Garden City. BCS Bedfordshire branch. Contact W. R. Chisnell, Ampthill 403431 ext 57.
Visit to Central Fire Station. Glasgow. BCS Glasgow branch. Contact J. C. Fleming, 041-896 4141 ext 162.
The Do Office Automation Project. BCS Scottish WP&OA Group. Staff Club, University of

Strathclyde, John Street, Glasgow, 6.30pm.
Computerised Office Control. Visit to Leeds City Police. BCS West Yorkshire branch. 6.00 for 6.30pm.
DECEMBER 12-14
The Information Centre: Implementation and Control. Mount Royal Hotel, London. £425 plus VAT. More details from Frost and Sullivan, 01-486 0334/5.
DECEMBER 13
The Milton Keynes IT Strategy. BCS Croydon branch. David Firnberg, BCS president. Maple Room, Fairfield Halls, Croydon. 7.15 for 7.30pm.
Bottoms on Seats. BCS Harlow branch. Peter Wellman, Tourism Technology. The Norfolk Room, Saxon Inn, Harlow, 7.30pm.
The Wang Approach to Office Automation. BCS Office Automation Group. 100 George Street, London. 6.00pm.
Data Privacy. BCS Reading branch. J. Kenny, BCS Privacy Committee. Small Physics Lecture Theatre, J. I. Thompson Building, Reading University, 8.00pm.

DECEMBER 14
Graphic Display Primitive. BCS Newcastle-upon-Tyne branch. Newcastle-upon-Tyne. Durham University, Ellison Building, Newcastle Polytechnic, 6.30pm.
Computing in Developing Countries. BCS North Staffs branch. J. L. Bogod, UK Council for Computing Development. Harding Room, Crown Hotel, Stone, 8.00pm.
Micromice lecture and demonstration BCS Teesside. Dave Woodfield, 1981 world champion with Thumper. Computer and Mathematical Sciences Building, Teesside Polytechnic, Middlesbrough, 7.30pm.
Viewdata System Vinal. Visit to Talbot Motor Co. BCS Wolverhampton branch. Whitley, Coventry. 2pm. Contact Mike R. Nash, Computer Centre, Wolverhampton Polytechnic.
DECEMBER 15
Debate: The Computer Professional - RIP. BCS Guildford branch. Paddock Room, Green Man, Burnham, Guildford, 7.00pm.



Motorola creates a new kind of office automation company

Motorola recently created the Motorola Information Systems Group by combining the skills of several companies. Among them were Four Phase Systems and Codex.

The result is a company that brings you complete systems capabilities; a single source for both processing and networking elements in the office environment.

This integration of computing and data communications capabilities provides many advantages.

Obviously, there is the convenience and efficiency of dealing with one vendor for all systems requirements.

But even more important is the opportunity to "custom-tailor" your systems to your specific needs, because of the very broad range of processing and communications products we have available. (Many of these have been productively at work in customer installations in Europe and around the world for years).

In addition, there is the flexibility of our networking capability which allows data from divergent types and makes of

computers to be transported on one network.

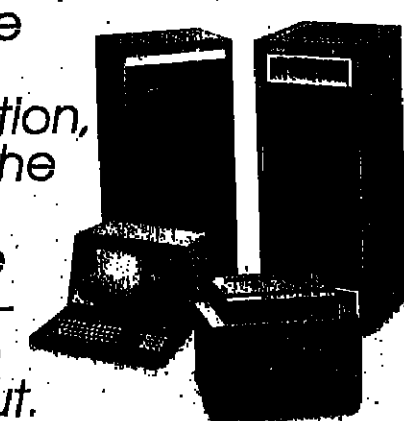
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II

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Apples

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**COMMUNICATIONS
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Transaction telephones could be valuable to retailers.

In August Gil Jones discussed in *Computer Weekly* the role of the new transaction telephones – or authorisation telephones as they are often called – in providing a convenient credit authorisation facility for retailers and others who handle credit transactions.

The article caused a good deal of controversy, with argument over whether transaction telephones indicate a significant development path

Credit to the retail sector – by phone

A GREAT deal has happened since my last article appeared – though so far I've managed to avoid actual bodily harm.

In August I described how transaction telephones work. I also identified the total potential market for them in the UK listed companies producing and marketing them, and argued that the transaction telephone represents a sensible step towards providing retailers with a valuable facility

that is available now, rather than in several years, when the various bodies involved get their act together on EFTS.

There is no doubt that the banks, or at least some sections of banking, do not welcome the use of transaction telephones. They want to retain degrees of freedom with respect to developments in this whole area, and see the transaction telephone as potentially impinging upon this.

towards more sophisticated payments handling, or whether they will get in the way of the main thrust of development towards full electronic funds transfer systems at the point of sale (EFT/POS).

Here, Jones discusses the issue further and describes some new developments – including a device from British Telecom – which will make this approach even more attractive to the retail sector.

To be fair to them, they make a number of valid points in their arguments. Some of these we will touch upon later.

The problem, from the user's point of view, is that developments in EFTS in the UK have lain more or less dormant since the late 1970s, while the various interest groups have attempted to arrive at a consensus in areas such as systems specification, who pays, and data security.

In my opinion it will be 1986 before we see experimental EFT/POS on any significant scale. A number of recent developments are of considerable interest.

British Telecom Silver, in conjunction with Comdial, has developed a lower cost transaction telephone using voice response techniques. Checkphone was demonstrated for the first time at the Data Communications Strategy for Retailers conference, held this week by British Telecom/RMDP.

Data created in low volumes at a large number of widely dispersed locations has always posed a problem, in costs and logistics terms, with respect to its collection and processing. It is well known that in certain circumstances a satisfactory answer can be found using voice response systems.

Comdial, the American telephone communications corporation, has worked with British Telecom in the development of the Checkpoint system.

To keep the cost of the telephone down, it has no card wipe, the credit card number being entered through the keyboard. This is an obvious disadvantage in terms of transaction speed and data accuracy.

It works quite simply: the retailer enters the card number, followed by the expiry date, followed by the amount of the transaction. The card check computer responds using voice response to guide the retailer through these procedures and to give clear instructions in circumstances where the transaction cannot be authorised. The Checkphone is buffered, so that data can be checked before transmission.

Unlike transaction phones already in use, the Checkphone does not make separate calls to the different card issuer centres. It calls out, using multi-frequency tone signals over PSTN, to British Telecom's card check computer, where the calls are routed on using high speed communications (either PSS or leased lines) to the individual card issuer centres.

The first British Telecom card check centre is already open in London, and the system as a whole is about to be launched.

The telephone will cost £95 for the first year and £17.50 per quarter on a rental basis.

I said in August that, while the credit authorisation facility offered by transaction telephones is useful to retailers in certain circumstances – and there is undoubtedly a market for the devices on this basis – their real value to retailers will only be realised when it is possible to use them in a paperless mode. When transaction data is captured automatically, there will no longer be a need to fill in the five-part forms that is part

of the current system.

This would have the effect of greatly speeding up credit and transactions. It would also improve data accuracy.

The banks' arguments against this are that it is vital that some audit trail exists for these transactions, and that this has an adverse effect on the cost of using the transaction telephone system.

At present it is possible to keep telephone costs for such a system down by referring only a relatively small percentage of calls to the credit card issuer's centre. The bulk of the calls are never actually made; the device provides a simulated authorisation code.

Because neither the retailer's checkout staff nor the customer is aware when a call is placed or otherwise, the system continues to provide higher levels of security against fraud than manual systems. But if it were necessary to capture all the transaction data, then, the banks argue, all calls



Gil Jones is a director of Retail Management Development Programme.

would actually have to be made, thereby greatly increasing telephone charge calls.

They argue also that it is necessary for receipts to be printed for merchant and customer.

There are some interesting developments along this path. A small UK company has developed a standalone terminal that can provide these facilities, as well as faster credit check communications.

The terminal, which is at present in prototype form and is anticipated, will be marketed from around the middle of next year, has a card wipe facility, a printer and a display. It is capable of logging the credit card number and obtaining authorisation for a transaction; printing a receipt for the merchant and, for the customer and storing the details of the transaction on disc.

Clearance of the transaction through the card issuing companies would then be obtained via tape exchange using the BACS facilities (British Automated Clearing Services).

The terminal is also capable of providing management information, such as the breakdown of transactions by card type, by branch and by department.

It is also possible to obtain breakdown by merchandise item when an inventory code is being used in the store which the terminal is installed.

Therefore, moves are being made towards providing these valuable facilities for the retailer.

WORKPLACE

In the first two articles of this series, we described a role for the data administrator and the factors which should be considered when choosing the

tasks with which to start the data administration function. This week we consider the people who are required to staff the function and its place

in the company hierarchy, and round off the series with a discussion of development once initial tasks have been successfully completed.

The people who matter in the administration

Richard Heagerty and Terry Smith sort out the key people in the data administration function

FIRST the people. What people do you want in the data administration function?

The key person is the analyst. We are not referring specifically to a data or systems analyst, but the kind of person who will find out about a problem, and what is involved in solving it. He should be user-oriented, determined, yet not antagonistic unnecessarily.

This role can be broken down further. You can have the analyst who is good at and deals with immediate day-to-day problems. You can also have the analyst who deals with long-term problems. Both are needed.

The function also needs a manager. This is someone who will ensure that the right managers are brought together, a decision is reached and followed through: Mr Fixit.

The manager's most useful qualification for the job is therefore an all-round knowledge of the business and its policies. It is advantageous if he has some experience of DP (particularly analysis) because he must learn its disciplines quickly if he has not.

To start with, the manager may also have to perform the role of the analyst. As soon as success justifies a bigger headcount, the analyst role needs to be assigned to someone else who can be relied on to keep out of office politics.

Thirdly, technical people may be required for various tasks. For example, when setting up a data dictionary, you need people with experience in using data dictionaries and a broad understanding of the software environment in the organisation. It may be necessary to modify the methods used in the DP department to get the best out of the dictionary.

The technicians assigned to work in data administration therefore need good technical and communication skills in order to get their peers to change their methods.

The important thing, we believe, is to ensure that one has the right analyst and management support in the function.

Most functions would probably claim the best staff should be assigned to them. This is certainly true of data administration if it is to succeed (and if not, why bother?). It is a small group needing a wide range of knowledge and skills and hoping to influence many parts of the organisation.

It is therefore no place for under-achievers or rainees. We are not going to talk about numbers, which obviously don't depend on specific tasks – but we would recommend starting small and growing slowly.

Who should the data adminis-

trator report to? A lot of people say he must be outside the DP function – preferably reporting directly to the board.

There is one company where, because of a scattered DP function and because there was a particularly strong individual outside DP reporting as an adviser to the board, we recommended that the data administrator report to him.

But in many situations, at least for the first phase, it would be unworkable for the data administrator to be outside the DP function. He would be too far removed from where the problems are – and too far out on a limb as far as effective support is concerned.

The key point is that the right reporting structure falls out of analysing the organisational nature of the problem, and in deciding how much management commitment is necessary and feasible. That pretty well decides to whom and at what level the data administrator should report, i.e. to the person who will give him the necessary support.

The main possibilities are: Within the DP department (pos-

trator report to? A lot of people say he must be outside the DP function – preferably reporting directly to the board.

In carrying out that first phase a lot of thought has gone into analysing the problem. Lots of people have been talked to, a lot of effort has gone into getting people together to come to a decision and get things working.

The trouble is that people see that as incidental and the resulting data dictionary, use of data analysis or whatever is seen as the thing that matters. That is what we believe to be wrong.

Clearly, the result of the first task – introduction of data analysis change control, data reconciliation process, information centre or data dictionary – is important and needs to be expanded, strengthened and built on. But that by itself will only meet at most a few of the data related problems. Many problems remain that can only partly be met by the tool or

Develop as a service, not as an empire. If you are providing a service people will co-operate – and co-operation is vital to setting up the data administration function. If you develop as an empire, gradually people will close up. Thus you may win an empire, but you will lose a great opportunity

sibly directly to the DP manager or next level (down); managers outside the DP department where there is strong support for data administration; or to the project manager in a major project (eg the company MIS).

Let's assume that the first phase has gone OK – you have set up the data dictionary, or sorted out how to define data between the different parts of the company. You have built the system using tight controls; or, after five years, got a data dictionary and all the systems on the data dictionary.

Assume that first phase has passed successfully, what do you do next? Obviously you go on to another task – having proved yourself once, you want to carry on to the next step. So for the second phase, for the first phase, you need to find a new problem, look at what is feasible, look at what support is likely to be available, then select should now be greater, because you have proved yourself. It would make sense to capitalise on this support and select a task that partly involves people won over during the previous task.

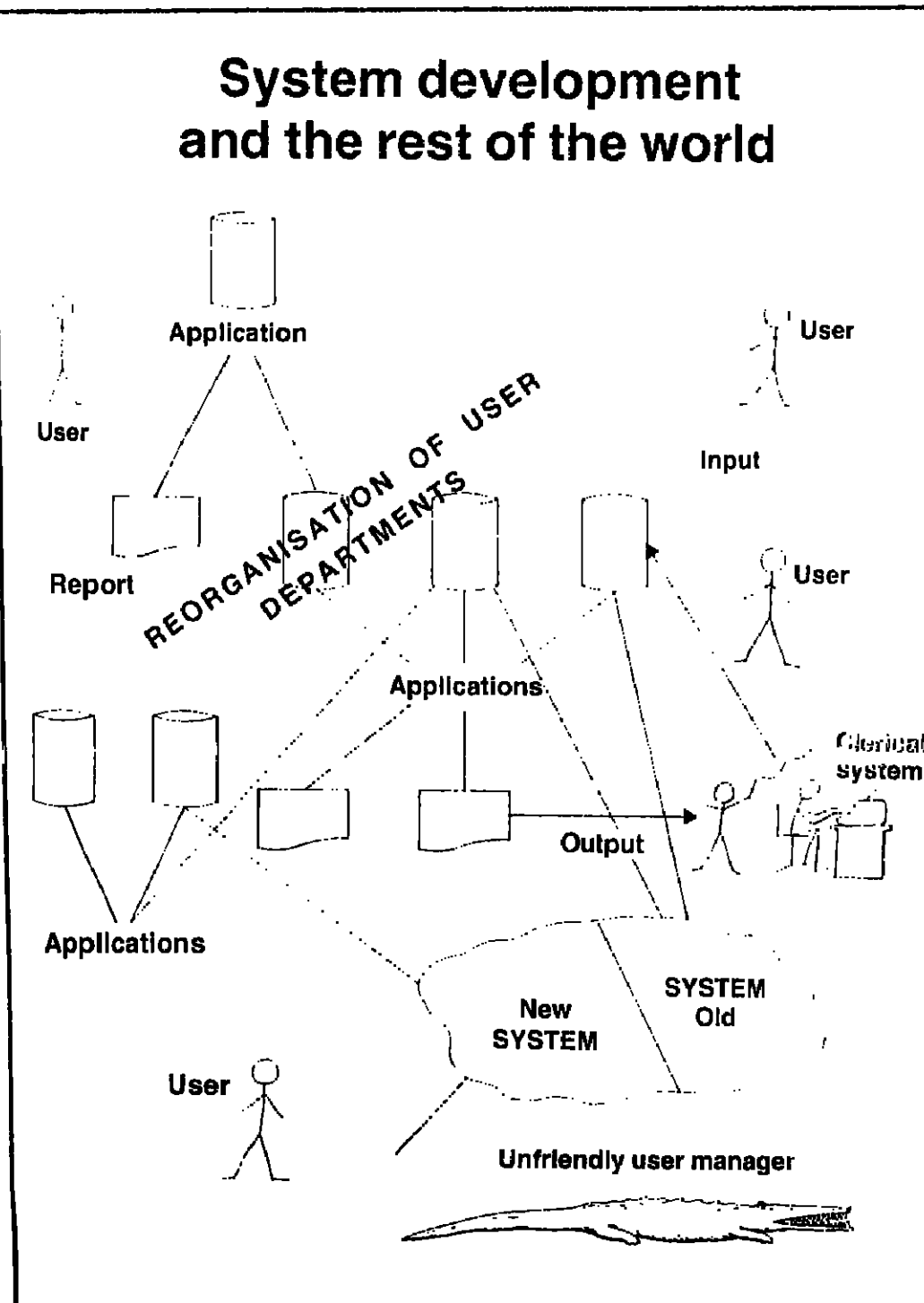
But it is necessary also to advance the long-term aim of a data

technique that has been introduced or developed. Furthermore, new problems will continue to arise. Some will have external causes such as changes in the company's organisation or markets. Others will be caused by the very success of data administration and the changed perceptions it gives.

The most important thing is to preserve the process of identifying and analysing that data problem crossing the organisation boundaries. However, you cannot sell that as a concept by itself. It is necessary to prove it by applying it to concrete tasks.

The trick is to make sure you do prove it and carry on with it rather than just getting bogged down into the specific task that has been developed. It is important to preserve the method of tackling the problems, not just the results.

How this long-term aim is furthered will depend very much on the precise company situation. Some pointers are: Try to get an increasing planning role in subsequent tasks; try to get the co-operation required between senior managers built into ad hoc or standing committees perhaps with the data administrator as secretary; consider changing the reporting



structure; have the investigatory role built into the job specification.

Education of relevant management is important here – and it is doubly important that the data administration managers and personnel themselves have a clear understanding of the long-term objectives.

The next recommendation is probably going to hurt. Push back

for training, and for the standards for data analysis, and for where difficulties arise. So now you have time (and support) to consider remaining data analysis problems, and to deal with other data problems – instead of spending all your time and effort fighting your corner against the systems development manager.

Or to put it another way, develop as a service, not as an empire. If you are providing a service people will co-operate – and co-operation is vital to the process of setting up the data administration function.

If you develop as an empire, gradually people will close up. Thus you may win a small empire, but you will lose a great opportunity.

That, briefly, is how we believe you should set up a data administration function.

To sum up, we make four key points: First, much or most data administration is not done by the data administrator or his group. Once you understand this point, then much else in setting up a data administration function becomes much clearer, and tends to fall into place naturally.

Second the data administration function should be based on data problems, not on techniques and tools. The data administrator is there to identify and to analyse problems, not as the person who looks after the data dictionary or sets up data analysis. He may well

actually do these, but they are a means to an end, not an end in themselves.

Thirdly, base the first phase of setting up data administration on perceived problems in the company, on the degree of management support that is possible. You can only get so much (go and ask for it, do everything you can to get it, but there is only so much support you will be able to get, and a limited time before results are required. Therefore, set up the first phase so that there is a reasonable chance of success.

Lastly, build from the first phase to achieve a function responsible for identifying new, changed or unsolved data problems and for pursuing these problems. Don't get stuck in the particular role or task that is the first task. Generalise so that you become the function for data.

If this is done, then we believe there is a real chance that in a few years there will be data directors on the boards of a number of companies. The data administrator or manager will be there, not because he or some consultant have told the board that it is right.

He will be there because, over a period of time, he has proved so invaluable that his skills and knowledge are wanted on the board, by the other members of the board.

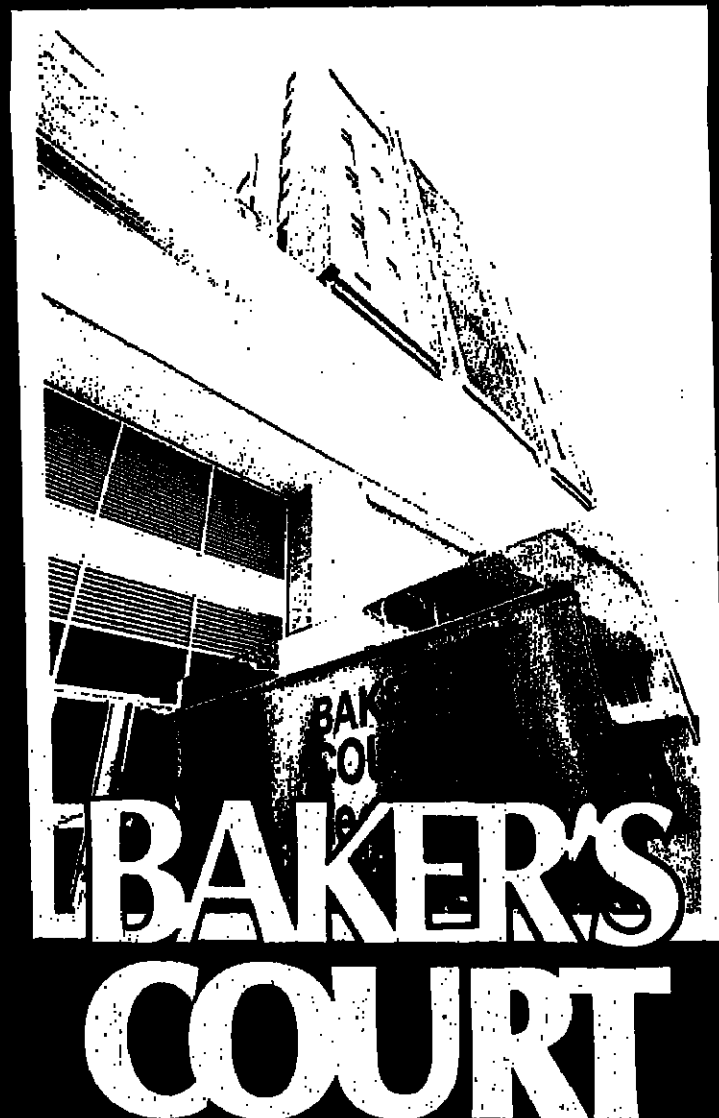
Richard Heagerty and Terry Smith are consultants in CACI's business information department.

PUZZLER

$X(1)+XXX(2)+XXX(3)=aa^2$
 $X(1)+XXX(2)+XXX(4)=bb^2$
 $X(1)+XXX(3)+XXX(4)=cc^2$
 $XXX(2)+XXX(3)+XXX(4)=dd^2$
 In this problem you are asked to find four different positive integers. As is indicated by the number of Xs, integer (1) has just one digit, while the other three integers have three digits each. The bracketed numerals have been in-

serted merely for the purposes of identification. Each of the four equations totals to a different "two-digit integer squared". The letters aa, bb, cc and dd are again used merely for identification purposes – aa, for example, does not necessarily mean that both digits involved are the same. See page 61 for solution.

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PERSONAL COMPUTERS

There is doubt as to when and by whom the term "personal computer" was first coined, but none as to how it obtained its dominance over the alternatives of micro, small business computer, and so on (writes Mike Blench, development director, LSI Computers). When IBM chose the term, everybody suddenly found it a great description.

Yet it illustrates a fundamental point. The typical personal computer is, in a phrase, too personal.

Few manufacturers have realised that for business use, no office equipment — and let's not get carried away, personal computers are just that — can be considered applicable only to an individual. Even the humble pencil gets handed around.

So-called personal computers are used in offices as word processors, to run accounts, to issue and control stock and

generally either to emulate the work of their larger mini and mainframe brothers and sisters, or act as their intelligent terminals.

The usual form in which personal computers appear — screen on a processor box with disc drivers and a separate keyboard — has evolved as much from manufacturing expediency as user ergonomics.

The more a personal computer can be assembled from finished OEM sourced components, the easier it is to bring new designs to market. If the VDU, or processor or keyboard on your computer pops up in someone else's, don't be surprised — it is a compliment that at least two suppliers consider it a worthwhile peripheral.

But personal computers applied to the automation of all manner of impersonal procedures have a delightful habit of

suggesting to their users other work they could also improve. Stick a personal computer in as a stores control terminal and sooner or later the storeman will want to use it to keep track of returnable packaging or works vehicle drives.

It is then you realise the computer needs a little more memory or disc capacity, or it needs a back-up to a dumb terminal, or three of its own. It is then, also, that you realise the limitations of the average personal computer.

True, some are capable of multi-user operations, and bolt-on storage can be bought. But it can get clumsy and slow and someone in the stores will now need a miniature course in computer operation.

Many micros, when their multi-terminal bluff is called, have such long response times that impatient users start thumping on keyboards.

How the micro makers upset the Apple cart

John Cornwell takes a Personal look at the way the micro has soared in popularity since its birth in the 1970s

THE microcomputer industry had its origins in the 1970s in machines designed for the electronic hobbyist market in the US and, from these early days, three leading companies emerged, of which Commodore and Apple were new, and Tandy was then, as now, a force to be reckoned with in consumer electronics and goods for electronic hobbyists.

These three companies set the pace in the microcomputer industry until late 1981 when, for the first time, other companies including IBM entered the microcomputer business and thus upset the status quo.

Nowadays, with microcomputer products coming from all sectors of the computer industry, the marketing situation has become somewhat clouded by the proliferation of outlets. Tandy, for example, sells direct to users via its own retail shops of which there are several thousand.

Manufacturers like Apple and Commodore, however, sell through specialised High Street retailers or via franchised electronic distributors — and, in some cases, will even use large chain stores or super stores as outlets. Others, like IBM, tend to use only franchised distribution sources.

What do these various outlets offer to the user? With a retail

operation he will get good technical and other support, eg software and peripherals back-up on a specific product from well-identified and easily available sources.



CORNWELL... LAN growth."

The retail shops will also, in general, give good back-up — but often on specific or fairly limited ranges. The large stores, again, will offer limited choice and, for the moment at least, possibly limited back-up.

Officially franchised broadband microcomputer distributors should be able to offer wide choice and comprehensive support al-

though, obviously, some may tend to take the specialist by manufacturer route. Their main problem, undoubtedly, will be in making sure the services they can offer are communicated properly to a market which may not be very aware — and even slightly suspicious — of such outlets.

At present, the UK is the largest European market for personal computers with almost half the total UK sales going to the south-east of England. This market is expected to grow despite a still rather sluggish economy and the relative lack of disposable income. Currently, in the UK alone, over 120 companies are supplying more than 250 different models.

The UK market can roughly be divided into three major sectors: the business/professional market, the home hobbyist market, and the analytical/scientific market.

In terms of value, the business/professional market is the leading sector, worth over £160 million (including peripherals), that is about 46% of the total of the UK market value. This sector is dominated by Commodore, Apple, IBM, DEC, Wang and Sirius and 1982 estimates indicate that over 170,000 base units have been installed. Units shipped for this sector are estimated at 50,000 for 1982.



Tandy is one of many suppliers now selling via its own retail shops.

The home hobbyist market — the second largest in terms of value (£150 million including peripherals in 1982 and around 43% of the UK market value) — is dominated by Sinclair, Atari, Dragon, Oric, BBC/Acorn, and the Commodore Vic. This sector has by far the largest number of UK installed base units and number of units shipped, figures for 1982 being quoted at 600,000 and 383,000 respectively.

The smallest market sector (11% of the total UK market) is the analytical/scientific sector, where Hewlett-Packard predominates, representing a value of £40 million including peripherals. There are over 30,000 installed base units in the UK and more than 8,000 units were shipped in 1981.

There are already many significant trends for the future. Prominent among these is the increasing penetration of large manufactur-

ers, such as IBM, DEC, and Wang, into the personal microcomputer industry. This is, in part, achieved by the takeover of smaller companies. Other large companies, including STC (STC Micros), Granada, Tesco and RHM, are now investing in personal computer distribution.

With possibly 20,000 or more IBM Personal Computers already in use throughout Europe, it would appear that this particular company has become the leading manufacturer in the business/professional sector. Leading manufacturers in the home hobbyist sector are expected to be Commodore, Atari and Sinclair although this is a volatile sector which can change very quickly.

As regards the non-European invasion, Japanese and US suppliers are finding the introduction of new products into European markets slow due to the difficulty they have in translating

software and documentation, although the Japanese are making every effort to cure this problem.

Other trends for the future include the increasing use of A3 digital plotters which are needed to give graphics printout. This is an area where the Japanese are making headway as indicated, for example, by the recent introduction of the very advanced Iwatsu SR6602 low-cost, flat-bed intelligent plotter.

In addition, the future will see the growth of Local Area Network (LAN) technology with shared storage devices and peripherals; the use of personal computers with mainframes which will enable access to the mainframe together with local usage of the personal computer; access to remote databases via a modem; and electronic mail.

John Cornwell is business manager of STC Instrument Services.

PERSONAL COMPUTERS

Robert Parry discusses what it will take for low-end microcomputer firms to survive the current price-cutting war

Who will the survivors be?

IT was a mixed micro year. It was the year of glamorous, long-awaited machines like Lisa; it was the year IBM forced its attentions down the personal computer scale with Junior and up with the 3270 PC and XT/386; it was the year that the new standard businessman's micro stepped into an eight-bit Z80 machine running CP/M and became a sort-of 16-bit machine running MS-DOS; it was the year that all these machines claimed IBM compatibility, portability, or both.

And it was the year that the gill started to fall off the gingerbread. For in 1983 the troubles at the low end of the micro market, the viciously competitive consumer home computer arena, intensified.

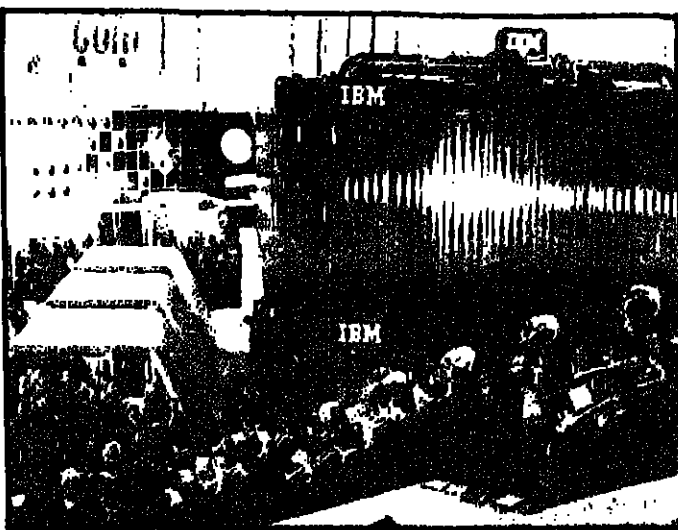
Companies like Atari and Texas Instruments (TI) saw losses here stamped towards the million dollars a day mark. Price cutting to maintain market share raced on, driven by those like Commodore that could stand the pace while still turning in higher profits.

For TI the game became too much and it bowed out of the home computer market — perhaps less than gracefully — last month.

UK companies felt the chill too. Last month saw Sinclair spin-off Jupiter fold in Cambridge, while earlier in the year Grundy switched off its NewBrain, and Dragon had to call on a £4½ million rescue package to stay in the game.

These price wars and their attendant effects on manufacturing companies were not new to the consumer market. But this year things moved up a gear — and moved up range. Business micro manufacturers began to feel the pinch, and stock market favourites fell from grace as profits dropped and delivery schedules slipped.

The predicted shakeout, from hundreds of micro companies to just tens, had begun. IBM had



Follow the blue brick road...

Chuck Peddle, designer of the Commodore Pet all those years ago and the original force behind the Victor (née Sirius) micro company, stepped aside too. Victor's backers, the Kidde Corporation, stumped up cash to keep the company going, but the workforce is getting smaller and losses increase. To many Victor looks shaky, propped up by Kidde, because Kidde has too much in Victor to lose.

One-time darling of the money men Fortune Systems, the micro company claiming the biggest venture capital backing when it was set up, turned in losses nudging \$10 million.

Founder Gary Friedman — no stranger to computer company reverses after his time with hardware leasing company Ite, which went bankrupt three years ago — resigned, followed by Fortune's finance director. And this was all because of software delivery problems for this up-market, multi-user Unix machine, aiming for a market niche not threatened by IBM. Yet.

At other companies there have been less drastic results from declining popularity. Share prices have tumbled in a wave of Wall Street pessimism at computer company prospects, numbers of employees have been cut back, prices of machines have been trimmed — or more has been offered for the same money.

Gloom followed IBM's announcements of PC-to-mainframes links through the 3270 PC and the desk-top power of its multi-window XT/386 — announced on the same day that Digital Equipment's share price fell \$21 on its personal computer losses. "Black Tuesday", October 18. But despite that gloom, it is still a game that people want to play.

Personal computing is still a market companies feel a need to move into. Only last week Sperry leapt in with its IBM-PC-like micro, its first personal computer product. The move leaves only CDC of the established mainstream computer majors without a product in this area.

Companies that went for a splash in the micro market but rather slithered into the trouble waters try again. ITT is after a comeback with new IBM-PC compatibility, despite lackluster sales of its 3030 micro. Olympia has put the sad sales performances of its Boss micro behind it and is looking again to break out of traditional office equipment into the automated office micro.

In most of these moves — both first and second attempts — the IBM presence is clear. The blue hand print of PC compatibility (for protection against the evil eye) is displayed proudly. Sperry has just done it. ITT has just done it. Data General did it on its Desktop Generation, DEC did it with a vengeance.

But the best example of the born again micro maker must be Hewlett-Packard. It stopped and took stock for six months, then changed course radically. Its history had been one of high quality expensive micros for niche markets — mainly the scientific and engineering circles, which bought HP because it was HP. Now it is going hard for the micro mass market, general purpose business machines, with the HP 150, the Touchscreen PC.

"We made the decision about a year ago," says Alan Furniss, HP's new UK general manager of the personal computer group, a reorganisation of previously separate business centres within HP. "It was before the glamour went out,

before all the troubles, but the mainstream microcomputer marketplace is huge — and growing.

Lately DEC's plans look to be going awry — so why will some succeed where others with equally grandiose plans may fail?

"You need to get the product right to start with," says Furniss. "and with personal computers that means the software. We recognised MS-DOS as the right operating system, with a whole heap of software from industry standard names, plus plenty of local popular packages for each market."

Or to paraphrase, everybody else has followed IBM, so to succeed you need to follow the blue brick road. There will be variations, in HP's case the touch-sensitive board extra, that mark out some from the mass "me-too" products, but IBM has set the winning style.

Promising the right product is not enough. Companies have to produce machines that live up to customers' expectations at a price that is right for the real world.

There is another departure here for HP, says Furniss. The 150 will be the first HP product to sell at a price set by the market, rather than one based on cost plus a margin, and that price will drop if the market changes.

Gaps between promised performance and capability that can be delivered have plagued some of the trouble-struck micro companies. With others the troubles have been in delivering machines that measure up at a price customers will pay and the makers can afford.

With others, the problem can just lie in being able to churn out

boxes quickly enough — a trouble shared by successful and ailing companies alike.

There is a delicate balancing act here. Enough demand has to be created for people to buy the boxes and give sales volumes needed to make the product a success, but it must not be so great that there are long waiting lists, disgruntled customers and uncontrolled cash flow.

So if the shakeout is on its way, if the micro bubble is bursting at last, who will be the survivors?

More and more it looks as though it will be the big boys again, with product ranges stretching from portables, through PC-like desk-tops, on to Unix engines and micros linked into networks and to mainframes.

IBM is going that way, dominating

Customers play safe and go for the stability epitomised by IBM

ing the market with the PC, hard disc XT, mainframe terminal replacement 3270 PC, high power XT/386, plus rumored 68000-based supermicros. Texas Instruments is heading that way, with a portable machine just launched to back up the Professional Computer desktop IBM clone, and the promise of more to come.

Hewlett-Packard is starting that route, with compatible products for its 150 Touchscreen family promised every three months — plus all the others it already produces up to the 32-bit desktop mainframe. Apple is going that

way, with Macintosh imminent to plug the gap between the ageing Apple II, disappointing Apple III and upmarket Lisa. Commodore will be moving that way when its Zilog link turns up Z8000-based 16-biters.

There is still room for a comfortable living from small companies filling niche markets, from companies fulfilling market demands for home-built machines: from companies like Convergent Technologies and Scotland's Future Technology Systems, selling OEM to other, bigger fry; and from companies that follow the leaders, but do it more cheaply.

These will come and go, though — maybe being swallowed up by bigger computer makers to fill out company expertise.

Image counts. The winners will be those companies with the marketing strength to be seen as survivors. Doubts about viability — will the company be around in six months time to maintain and extend large micro installations? — dent sales. This in turn raises doubts about company viability.

Customers coming along to buy thousands of machines to install in large companies play safe and go for the stability epitomised by IBM.

"The companies to survive will be the big ones that want to stay in this market," says HP's Furniss. "You need financial muscle for short notice R&D to keep up. You need to be able to spend millions at the drop of a hat."

"The ones that are just playing at it are never really going to be successful."

And then there are always the Japanese...



PEDDLE and OSBORNE... No longer in the limelight.

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The Universities had a problem. They had difficulty communicating internally, let alone with one another. They needed to network their computer systems and terminals to provide access to on-site hosts. And also to the off-site facilities of the integrated academic network. The Camtec JNT-PAD did just that. As a PAD it links VDUs, printers and micros into X.25 based local area networks. As a reverse-PAD it provides port contention and X.25 access to non-X.25 hosts. As an X.25 switch it links together PAD's, on-site and off-site X.25 hosts. As British Telecom approved for connection to their Packet Switch network, it provides the connection to the Public Data Network. The JNT-PAD is only one of a range of products within the X.25 and LAN fields manufactured in the UK by Camtec. Call us on 0533 537534 and find out how to get on the Old Boys' Network.

CAMTEC
Joining networks together

PERSONAL COMPUTERS

Micro sales double to 1 million units

John Aczel combs through the latest surveys on a rapidly-growing market

WHILE it is a cliché now to say that the microcomputer market is growing rapidly, there is little doubt that the increase in demand for micros has been much sharper than originally anticipated. The use of micros is now widespread and growing rapidly in industry, in educational establishments, in laboratories, as well as among the home hobbyists.

In this article, the statistical background to the size of the market for microcomputers will be examined in some detail. Many figures are flying about (some of them ill-informed) which show the tremendous growth of the market for this equipment. It is hoped that a more realistic approach to the trend in micro sales will emerge from this investigation, even though a fair amount of crystal ball gazing is involved in any exercise of this kind.

Some computer manufacturers have been putting out wild forecasts about the growth in demand for micros, and some of their predictions have been very misleading. Naturally, with an industry which is so new and fast-changing, it is not always possible to make accurate assessments about the underlying trends.

Nevertheless, this sector is growing up and, though it has not yet reached maturity some of the latest developments can now be examined with some degree of confidence.

There is considerable confusion about the definition of the micro sector. In its broadest sense, a microcomputer is any system which is based on a microprocessor and which can be used for manipulating figures and words.

Thus, it includes a wide spectrum of products ranging from hobby computers to business and professional machines of various kinds. Normally, these micros are single-user systems, though some of them are being upgraded to multi-user purposes but, in this analysis, the main emphasis will be on single-user equipment.

On the whole, a useful distinction is now emerging between the business machines and those used for hobby purposes. The hobby computers normally sell at around £200 or less and include such machines as the Sinclair Spectrum, the Commodore Vic and the Dragon.

Moreover, there is considerable overlap in these two segments, particularly with regard to some of the machines sold by Apple and Tandy, as they can often be found among hobbyists as well as among business organisations. Nevertheless, business computer machines usually have a higher price range, ranging from £2,500 upwards.

Evidently, any such division of the market is an arbitrary one, but it is important to make the split because the trends in the two segments tend to be quite different. Thus, in terms of units, hobby micros represent the bulk of the market but, by value, it appears that business computers are much more significant. It is believed that business machines accounted for over 75% of total sales by value in

1982-83, whereas, by volume, they represented only 15% of the total.

Various surveys have been carried out to assess the size of the market for micros, and some of them have been of fairly poor quality. Some of the definitions used in the surveys have not been precise and have led to considerable confusion. Recently, however, Keynote Publications, a market research company, has carried out its own survey regarding the overall micro market, and some of its conclusions are worth summarising.

According to this investigation, the total number of micros sold in 1982 reached around 500,000 units, and this figure doubled in 1983 to around one million units. Sinclair computers accounted for over 50% of sales during the past two years. Keynote has summarised its own estimates of the installed base for all types of computers, although it should be emphasised that some of these figures may be subject to revision in view of the introduction of new models in recent months.

The market for micros in terms of value was also assessed by Keynote and the total value was as-

A fair amount of crystal ball gazing is involved

essed at around £375 million in 1982, excluding the education sector. The home hobby market was estimated at around £90 million, while business computer sector was worth £285 million. Moreover, the education market, which was now growing fast, was considered to be worth an additional £15 million per annum.

The figures given by Keynote are of considerable interest, although, unfortunately, they do not break down the market sectors to any significant degree. For instance, some of the Apples and Tandys mentioned in the survey can be used for business purposes as well as for hobbyists, but it is believed that the bulk of the figures represent the home market.

One can presume that, under the heading of "others", some of the leading business computers have been included, such as the IBM-PC and other business computers.

There is little doubt that the hobby market will continue to expand, especially if prices in this sector continue to fall at their present rate. The biggest growth, at least in terms of value, however, will occur in the business sector, where the introduction of micros is becoming of crucial importance. Evidently, from the point of view of manufacturers of hardware equipment, the business side is the one to concentrate on, as the rewards are likely to be tremendous.

Statistical information can be derived from an excellent survey which has been carried out by IDC Europe, a market research organi-

sation which has published a report entitled *Personal Computers Market Reference Book, Western Europe*. Full details can be obtained from IDC Europe, 2 Bath Road, London W4.

The IDC survey contains a mine of information not only about current trends, but also on future prospects. It is based on an extensive investigation, and has been backed up by a comprehensive postal questionnaire and by interviews.

Most of the leading Western European countries have been included in this investigation, but from the point of view of this article, special emphasis will be given to the results obtained for the UK.

IDC Europe adopts some precise definitions in its analysis, and divides the market into two

sectors: the business and professional segment; and the scientific and technical side. The business and professional sector uses micros for accounting functions as well as for analytical and managerial purposes. The scientific market includes micros used by scientists, technicians and engineers, particularly for R & D departments, as well as for instrument and laboratory analysis.

At present, the UK is way ahead of its European neighbours in terms of shipments for business and professional computers. British sales in 1982 were estimated at nearly 65,000 units, and the growth in this market was averaging 37% between 1982 and 1983. This rate of increase is likely to slow down, but the total market could reach over 316,000 units by

Table 2 - Forecast of shipments in the UK for personal computers (by volume)

	Business/professional computers	Scientific and technical computers
1982	64,700	15,900
1983	96,900	20,400
1984	130,700	25,300
1985	167,600	31,000
1986	209,200	37,400
1987	259,400	44,500
1988	316,400	51,600

Source: IDC Europe

Table 3 - Forecast of shipments in the UK for personal computers (by value)

	Business/professional computers (\$millions)	Scientific and technical computers (\$millions)
1982	201	64
1983	294	86
1984	389	111
1985	482	143
1986	584	181
1987	692	224
1988	804	266

Source: IDC Europe

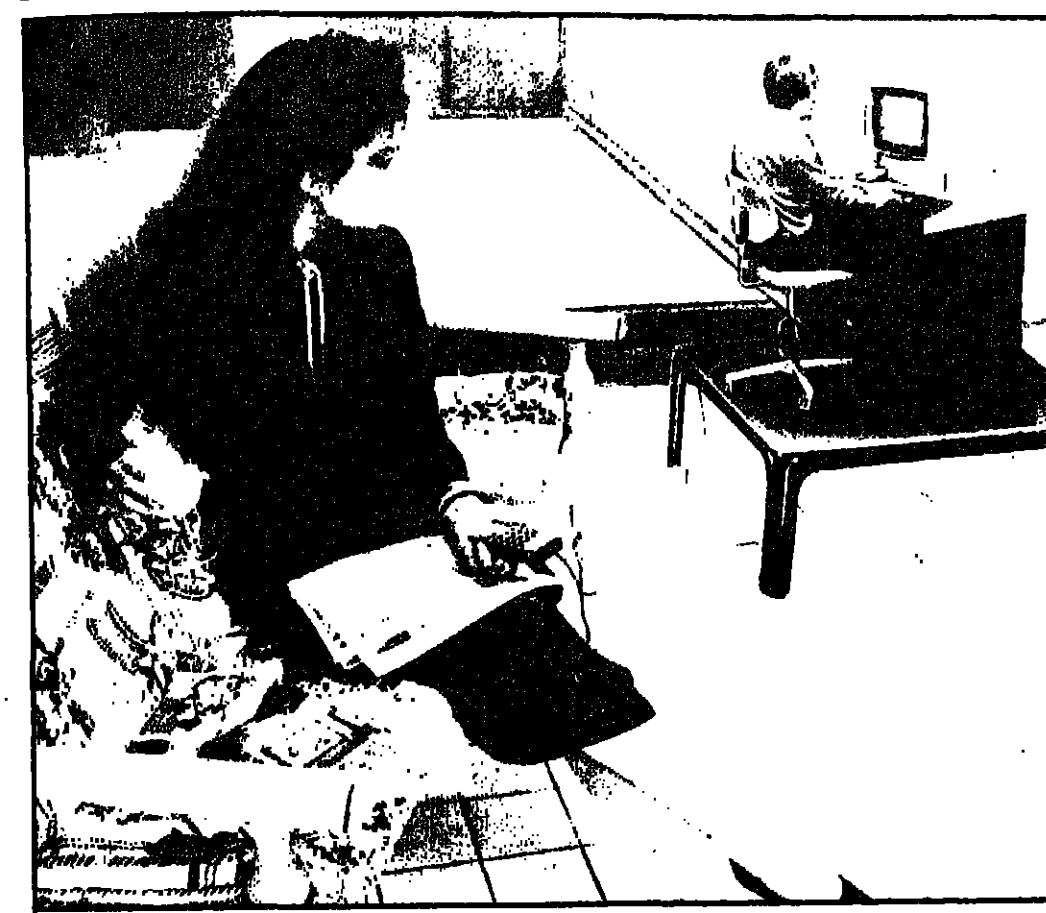
1988, according to IDC Europe.

For scientific and technical computers, the UK is also ahead of other countries, although West Germany is catching up rapidly. Shipments in this sector amounted

to nearly 16,000 units in 1982 and a growth rate of about 25% is estimated between that year and 1983. By 1988, shipments should reach

■ Continued on page 26

PERSONAL COMPUTERS



For the first time, there's a home computer that can bring the computer room into the living room.

IBM's new baby, the PC Junior, is at last with us. Roger Green analyses the most affordable IBM machine yet

Welcome, baby Junior

THREE major product announcements this winter have turned IBM's Personal Computer range into a compatible and formidable family of microcomputers. The family starts at a \$700 home computer (the PC Junior) and goes all the way up to a mainframe-on-a-desk at 15 times the price - (the XT/370) and a seven-tasks-at-once mixture of computer terminal and personal computer - (the 3270-PC).

Most attention has been attracted by the appearance on November 1 of the Junior. At the time of writing, this had only been announced for sale in the US, but it could appear in Britain in time for Christmas next year.

The other two variants of the Personal Computer unveiled in October are likely to have a big impact on the corporate microcomputing scene.

In particular, the new IBM products will squeeze not only those suppliers which are active in the home computer business, but also those microcomputer, minicomputer, and computer terminal companies which hope to do well out of surrounding IBM mainframes with their own, alternative workstations.

The Junior should be considered either as a powerful but pricey home computer or as a low-cost but rather limited personal computer compatible machine. It is suitable - at a pinch - as a professional's low-cost alternative to a full personal computer, or as a portable or home-based machine for users of the full-sized PC.

In the US, the Junior is seen very much as a rival to the Apple II as a home computer. That's a comparison that's not really valid in Britain, where disposable incomes are lower, and the Apple has had more of an impact as a business and professional personal computer. This is a role to which the Junior will be ill-suited: there's only one disc drive officially avail-

able and the keyboard is not really suited to anything but fairly casual use.

The Junior's lack of ability to display high-quality monochrome text - a major feature of the ordinary personal computers - also limits its appeal to the serious microcomputer user.

If the Junior is carefully priced, when (and if) launched in Europe, its cost could compare favourably with the more expensive home machines notably the BBC microcomputer. It would be particularly suitable for business people who think they should use microcomputers in their businesses but would like to try one out at home first.

Although the IBM Junior almost certainly would cost more than its rivals, it has two big advantages over other home computers: it uses a 16-bit processor chip which delivers more processing power than the eight-bit chips used in other domestic machines and, more importantly, offers users far bigger memories to run programs.

Secondly, the Junior is positioned at the start of an unrivalled, compatible growth in single-user personal computing. The machine uses the same operating system and a good proportion of the same applications programs as all the other models of the Personal Computer.

With the IBM Junior, a user could start off with a \$700-odd (C460) no-disc-drives model; grow smoothly to a \$1,300 (C870) single disc drive machine; then graduate to a full-blown IBM Personal Computer with proper keyboard, high-quality monochrome text display, two disc drives and printer (£3,500).

After that, there are the high-capacity, 10-Mbyte PCs. The growth goes all the way up to the \$3,228 IBM PC XT/370 mainframe-on-a-desk. This has 64 Kbytes of main memory, and two 10-Mbyte disc drives. It can run programs written for IBM mainframe computers, as well as those produced for the PC.

For the first time, there's a home computer that potentially brings the computer room into the living room. In practice, few lay users are likely to start with a discless Junior with programs stored on audio cassettes, and then move on to an XT/370. But there's lots of useful scope in between.

PC Junior is a compact, desktop microcomputer that's to be sold in two parts: a "system" unit, and a 62-key keyboard. A visual display unit - either a US NTSC broadcast standard television set, or one of two standard types of monitor - costs extra. The battery-powered keyboard can be used without a cable by communicating with the system unit by pulses of infra-red light, in the same way as some makes of remote control television set.

The invisible link is claimed to work at distances of up to 20 feet, as long as keyboard and display are in line-of-sight of each other. There are two models of Junior: both based on the same system unit. The \$669 Entry Model features 64 Kbytes of main memory and two slots to accommodate

read-only memory cartridge-based programs. Storage for data is provided through a built-in audio cassette recorder interface. The \$1,269 Expanded Model is just the cheaper Entry Model with the addition of a 64 Kbyte memory expansion module, and a PC-compatible 5 1/4 inch, 360 Kbyte floppy disc drive.

The Junior, is limited - probably intentionally - in the quality of text it can display on-screen. Although it's as good as any other home computer, it's not in the same league as the text displays produced by the PC and other, modern professional's personal computers.

For serious users, the Junior's weakest point is its keyboard. What it does have going for it is the technical gimmickry of the infra-red link. In practice, though, this is not a particularly vital or even especially useful feature. For skilled users, the Junior's keyboard is tougher than touch typing. The more typical hunt-and-peck keyboard will find the Junior frustrating too. The keys are poorly labelled and it's difficult to see which is which.

There appear to be no immediate plans at IBM to bring the Junior to Europe: in most countries, the company is still trying to settle down to the novelty of selling through computer shops, without becoming immersed in the cut-and-thrust of what is at one level, almost the toy business.

A likely time for the Junior to be launched in Britain is before the Christmas 1984 buying period. IBM will have to do some hard thinking about its price, though. Disposable incomes in Europe tend to be lower than those in the United States, yet IBM tends to price its personal computer products higher in the UK than it does in its home market.

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If you'd like to know more about the remarkable new Husky Hunter contact Husky Computers Limited, P.O. Box 135, Foleshill Road, Coventry, West Midlands CV6 5RW. Telephone (0203) 668181, Telex 313171.

Husky Hunter
The Mightiest of micros

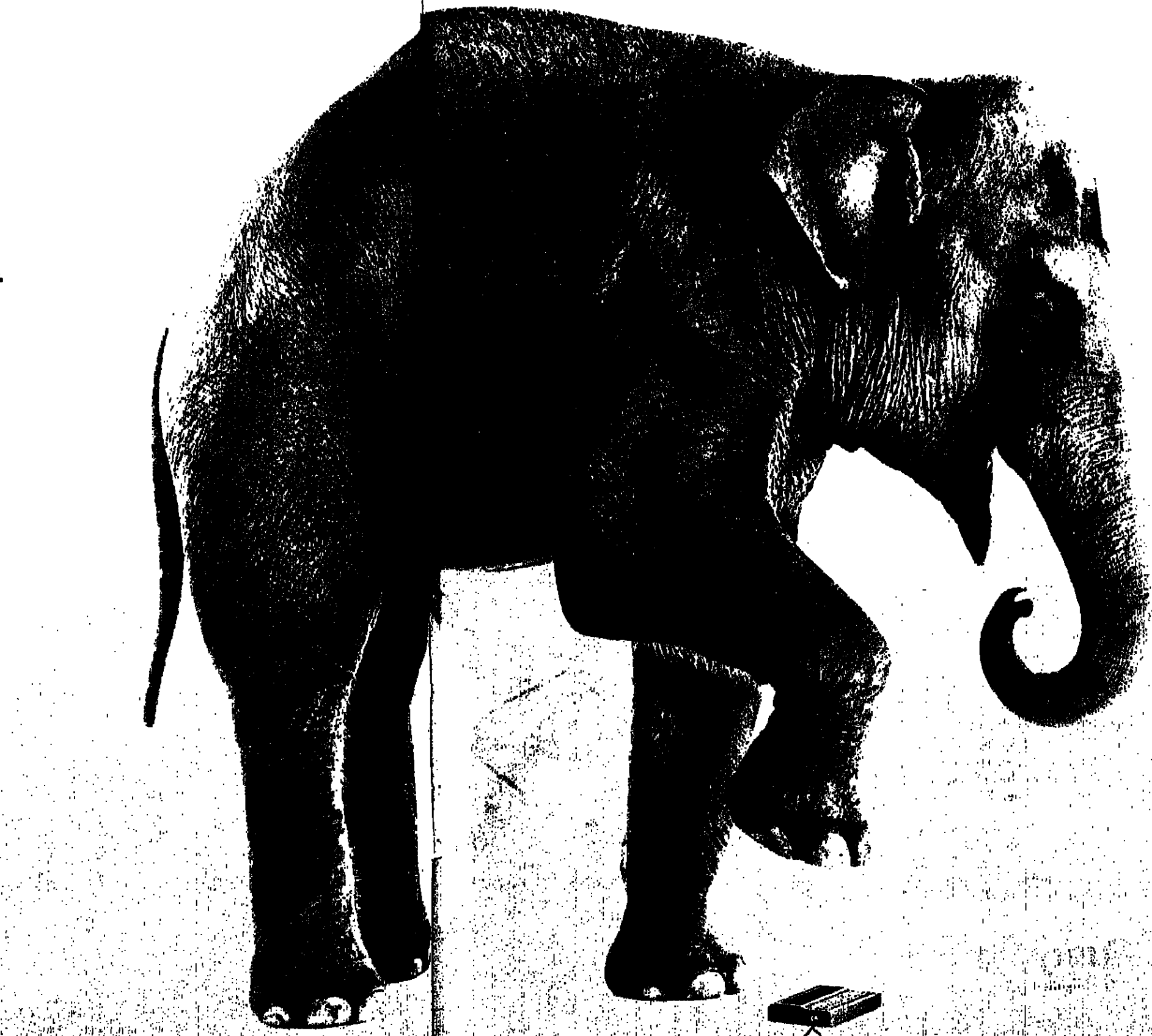


Table 1 - Number of installed microcomputers

	1981 (000s)	1982 (000s)	1983 (000s)
Commodore	50	160	320
Apple	30	55	100
Tandy	27	45	90
Sinclair	185	460	950
Acorn	35	45	170
Others	80	160	320

Source: Keynote Publications

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The Information Technology Planning Conference 1984
Royal Lancaster Hotel, London
7 and 8 February 1984

Conference Programme

7 February 1984

Day 1 Morning

Chairman's Introduction

David Fairbairn, Director, NCC

Most significant trends

Mike Reidy, Senior Consultant, IDC Europa

IDC Europa, the international market research company, and Computer Weekly are combining on regular surveys of the UK data processing industry. Mike Reidy will draw on data from those surveys, as well as IDC's other market research efforts, to map the current and future course of information systems.

Systems Architecture – the options

Will Zachmann, Vice President, Corporate Research, IDC

Emerging as a key issue in systems acquisition is the processor or processors. With options available for single, tandem or multiple processors, what are the selection criteria? Allied to this are the capabilities of the operation systems for multiple processors and the separation of data handling procedures (database, dataflow, file servers).

Afternoon

Chairman's Introduction

David Craver, Editor, Computer Weekly

User software – the options

Reg Boot, Group Director, Training and Software, NCC, Fons Kuipers, Consultant, IDC

While the decision between package or custom software remains, there are new factors which will influence this. There is a choice of software development tools available with

program generators and new design methodologies. What impact if any, will expert systems have in the area?

Human Interface – the options

David Hebditch, Consultant

User friendliness can mean many things, from simplicity of system usage to the ergonomic effectiveness of the equipment. What effect will multi-function work stations and graphics capabilities have on human interface? Will voice input begin to replace the keyboard?

8 February 1984

Day 2 Morning

Chairman's Introduction

Peter Rowell, President, IDC

Human resource – the facts

Dr John A.G. Thomas, Publishing Director, Computer Weekly, Deputy Managing Director, Electrical-Electronic Press, John Griffith, Group Director, NCC

The most important resource. What are the facts about salaries and current trends? What are average staff turnover levels? How do you find, train and then keep your good staff? This session will also cover the role of the IT supremo and the concept of the information centre.

Communications – the options – 1

Martin Healey, Professor of Microprocessor Engineering, University College, Cardiff

This session will consider the options available for users of local area networks (LAN) giving emphasis to the topologies (Star, Ring, Ethernet) and their application.

Afternoon

Chairman's Introduction

David Fairbairn, Director, NCC

Communications – the options – 2

Professor Martin Healey, Dr. Peter Scott, Manager Communications Division, NCC

When the network involves remote sites with long distance telephone lines interconnecting them, this is a wide area network (WAN) this session examines the factors influencing WAN systems, the manufactures, the location of people, the modern PABX, teletex and viewdata.

Communications – the standards issue

Keith Bartlett, DOTI

International standardisation organisations are making real progress towards supplier-independent standards which are of benefit to users. For IT communications the most important of these standards are for open systems interconnection (OSI) the Dept. of Trade and Industry is supporting the development and introduction of these standards through IT's 'intercept' programme.

Panel Discussion

Application of AI – the options

Brian Oakley, Director, Alvey Programme

Artificial Intelligence and expert systems are now all the rage. There are, however, very few working systems, and many question whether they have a useful application in the commercial data processing environment. Brian Oakley, who is leading the UK's research and exploitation of the next generation of computer systems, describes what is available and what is promised.

Chairman's Summary

Take two days to determine your IT strategy

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CW12

CWEE 2

PERSONAL COMPUTERS

Micro meets mainframe

Martin Banks looks at the growth of computer interfaces

ONCE upon a time there was the intelligent terminal, a device without which no self-respecting DP manager or owner of a time-sharing network could possibly be seen. Then one day, along came the personal computer.

For many years, the two have looked entirely different animals. The personal computer, with its history steeped in the world of the soldering, iron-wielding, techno-freak hobbyist, was just a little far removed from the environment of the intelligent terminal — serious, business-like, protective and efficient.

The personal computer, however, has grown. Some of the companies that started making hobbyist kits are now important, multinational corporations. Other companies, steeped in the history of the serious use of computers,

have realised the potential of the personal computer and what it can add to the existing facilities available to users through their mainframe and minicomputers.

That realisation has subsequently prompted them to enter

Early shots at providing a comprehensive tool have come from Peachtree

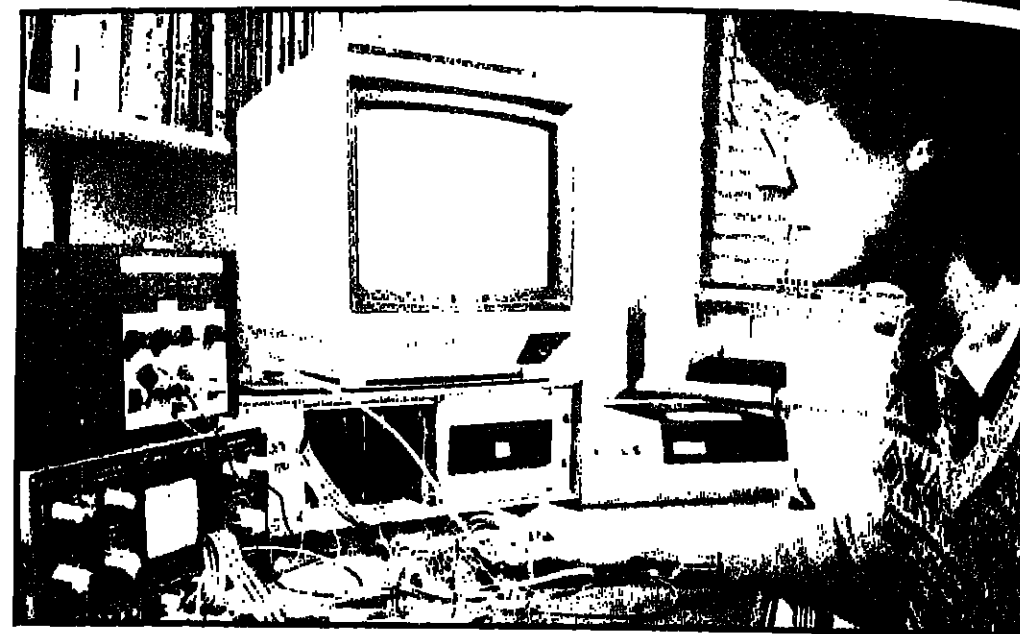
the market of personal computers themselves — occasionally with notable success.

It was only a matter of time, therefore, before the flexibility and performance capabilities of the personal computer came to be at-

tractive to those in the market for intelligent terminals. All that has been needed is the means by which an effective interface and usable between the personal computer and a larger host machine could be made.

To be fair, interfaces of one sort or another have been available for some time. But it is only now that communications packages offering a full and comprehensive capability to the end-user have started to appear. These offer the end-user the type of facilities and capabilities found in systems utilising dedicated intelligent terminals — devices that are specifically configured to operate over one communications medium with one specific type of host computer.

The first sign of this happening came some years ago, following the general acceptance of CP/M as the



Personal computers have left the realm of the hobbyist.

de facto standard operating system for microcomputers. Byrom Software developed a package called BSTAM and for the first time there was a generally available package across different computer systems. The only shared feature required was that they ran the same operating system, CP/M.

This proved a real boon to users, who found they could communicate programs and data to a

machine next door, or half way round the world, with ease. True, the machines were all CP/M-running micros and it would have been nice if one of the machines could be a mainframe so that the micro could act as a front-end machine — previously called an intelligent terminal.

Byrom came up with a solution here, called BSTMS, a fairly generalised package intended to allow either Ascii or binary files to be transmitted between the micro and the mainframe, and vice versa. It has been followed by several packages from a number of software houses, each intended to provide a specific type of link between mainframe/micro and a micro.

Term-II for example, makes a CP/M machine look like a dumb terminal on time-sharing systems using either Ascii or EBCDIC protocols, while Bsync 80 provides emulation facilities for IBM terminals on CP/M machines.

The majority of these packages have only scratched the surface of what is actually required of a comprehensive mainframe/micro computer interface system. Their main task has been to provide an alternative hardware solution to the use of a dedicated intelligent terminal.

This in itself is entirely honourable, for many of the intelligent terminals supplied as official hardware by the mainframe companies are anything but cheap. Well engineered and fully featured, yes. Cheap, no.

Many users have seen the sense of utilising a cheap micro with the right software as an intelligent terminal, for not only have they often been less expensive, but when not in use as a terminal they have been available for use as general purpose microcomputer systems.

This has been entirely satisfactory to those users able to exploit the technology and its techniques. But there is a vast army of potential users who do not have such expertise, yet still they have a requirement for linking to mainframe computers with their own micro.

This is especially so in many large corporations where the decision-making process is distributed across a large number of individuals. All may be experts in their own fields, but are not so in computing. They need comprehensive mainframe/micro communications tools, but lack the expertise to engineer or configure them from available individual products.

Needless to say, such tools are now becoming available. The early shots at providing a comprehensive tool have come from Peachtree, which has combined the basic requirement for communication with a set of application tools aimed at meeting the general processing needs of the average business executive.

Despite the fact that the system, known as Executive Peachpak, carries with it the obvious drawback of being compatible only with IBM mainframe systems which run software from Peachtree's parent company, MSA, it does serve to show the trend in mainframe/micro communications systems.

Its main advantage over the straightforward communications link is that a complete environ-

ment for the executive is created. Designed primarily for linking IBM Personal Computers to IBM mainframes, it incorporates a range of generally applicable resources both from Peachtree's own resources and from the product rosters of several other major software suppliers. In each case, the idea has been to provide the user with the typical tools of the business executive.

A significant element of the Executive Peachpak system is the rather grandly titled Universal Interface. This is a software link built into the package which has the task of interfacing the Peachpak communications system directly with a range of software applications packages.

These include the full range of

The ability to communicate around the world does not in practice pre-suppose one's ability to say anything

business applications software from Peachtree itself, plus the famous VisiCalc spreadsheet, and the recently introduced Lotus 1-2-3 management information system.

There is also a range of tools for such business applications as graphics, data management, and management reporting tasks, with word processing and a colour graphics module.

As it is designed for the IBM-PC and PC XT, it is most easily integrated into that machine, coming as it does as a plug-in expansion board to provide the physical link. Other computer systems can be accommodated, however, by means of a separate protocol converter box.

In either situation, the package sets out to provide the user with the facilities needed to conduct business as an executive. There is nothing particularly novel about this, for there is ample software available to provide all the aspects provided in the Peachpak.

Only time will tell whether Peachpak as a product eventually succeeds in the market place. It seems fair to speculate, however, that a product of this type (or several different ones of this type) will be what the users come to expect. It may seem trite to point out that the ability to communicate around the world does not in practice pre-suppose one's ability to actually say anything.

Apply this notion to the business world however and it gains a different relevance. For, though business people have a desperate need to communicate with each other both rapidly and efficiently — and with information technology equipment such facilities are now readily available — they still need to be able to speak to each other in comprehensible terms.

That means, in practice, being able to swap programs and data files and diagrams, preferably without having to worry too much about how it all works. The early samples of such facilities are now with us.

PERSONAL COMPUTERS

Users: you're entitled to help

Dick Moore says it's the supplier's job to back up small businesses

ALL the adverts make it sound so simple — buy a micro and some software from your friendly local dealer, take it to the office, plug it in and there you are effortlessly running a more efficient business. How many users would instantly recognise their own experience from this scenario? Unfortunately, too few.

The fact is that if you are buying a spreadsheet package you can probably learn how to use it on your own, but if you are buying software for accounting, stock recording, payroll and the like for your business, you will need help.

This is nothing new. Large companies installing mainframe accounting software still need the help of their suppliers despite having their own data processing department.

The micro world has been asking the end-user to install his other applications, equally vital to his business, without the luxury of in-house expertise or a high level of external support. It can be compared to asking the chief accountant of a large company to install his own accounts payable.

Large companies installing mainframe accounting software still need their suppliers' help

The point is that most mainframe software is sold at a cost of tens of thousands of pounds, so suppliers can afford to hold their client's hand through an installation.

The cost of a microcomputer package is in the hundreds, and the margins are not enough to enable suppliers to sell direct (other than by mail order), to install, or to maintain an installation.

Instead, most microcomputer hardware and software companies turn to their dealer network. It has been largely left to these dealers to support the end-user through installation and tethering problems, which may arise with even the most efficient of accounting packages.

In the sphere of the business microcomputer, the professional dealer is therefore taking on an enormous responsibility. While rapidly improving, the lack of computer literacy in the majority of would-be first-time users puts a strain on the dealer. With the profit margins on sales equally low for the dealer, few have the resources to provide the complete hand-holding service so often required by the end-user.

To help both dealer and user, major software suppliers are now spending time and effort trying to improve the "self-installability" of the products themselves. At Peachtree, we are stressing the importance of our product management team which is made up of staff with an accountancy back-

ground which extends to our technical authors.

Each member of the team is expected, periodically, to participate in an installation to obtain actual experience of user requirements to complement their product knowledge. From their experience of the applications they are preparing workable examples, for the user, of how different aspects of the software are implemented. This is intended to give the user a clear idea of how to introduce our applications into his business. This approach will, we hope, aid self-installation.

Most suppliers are improving the user-friendliness of the product with improvements to the computerised demonstration product. Far more care is also being taken in design, preparation and maintenance of documentation.

Additionally, more importance is being placed on the training of the dealer network. Most suppliers now have courses which they encourage dealers to attend.

With this kind of background, the prospective buyer can be confident that he is buying from someone who understands the product and who will be able to advise him on the suitability of the product for his company's requirements.

While the majority of dealers do provide training, it is far easier for the supplier to take responsibility and provide end-user training facilities with courses specially designed for the non-technical person. In doing this, the supplier frees the dealer so that he or she can concentrate on those areas where more hand-holding is required.

User training courses, professionally developed and run, have an enormous impact on the speed of implementation of application software within the business environment. Not only should such courses help the computer approach the way the computer approach fits business requirements and how to operate the software, but also the basics of the microcomputer.

The interest from the user in these specially designed courses is on the increase. At Peachtree, we have found a steadily increasing demand for our end-user courses and that we are being given the responsibility of training a group of staff from a single user company.

The whole industry needs more success stories: the media should be full of such items. The industry, unfortunately, is still geared to selling boxes and not business solutions. The users who actually care about the technical aspects of the boxes are few and far between — what they require is a tool which will help them run their business.

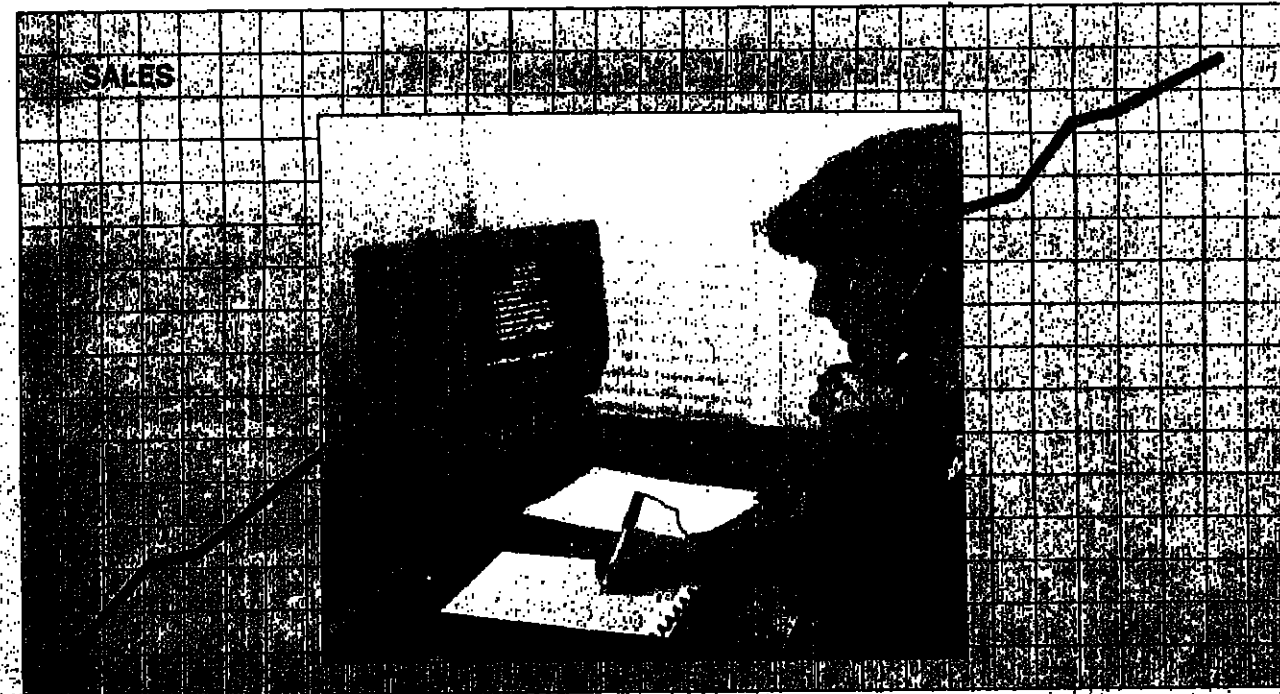
It is up to the industry to ensure that small businesses can computerise with minimum disruption and maximum support.

Dick Moore is UK general manager of Peachtree Software International.



Margins on micro software in the shop are too low to make hand-holding cost-effective.

Quicker data capture will capture more of your market.



With the cost of a direct sales force going up and up, more companies are turning to a telephone sales and ordering operation.

Some are using a conventional VDU and paperwork to log the order and then putting the order into a computer. Others are using a direct data capture system which can be connected to most computer systems. It's a connection that will foster increased sales for you.

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Please tell me more about the Ferranti HPR Tablet. Name: _____ Position: _____ Company: _____ Address: _____

Ferranti Computer Systems Limited, Wythenshawe, Manchester M22 5LA.

The beauty of Ferranti Tablet entry is that for the Sales department it's exactly like the original paperwork method of operation. So there's minimum operator training. And no duplication of effort. And if your main computer goes down the operator can still go on accepting orders.

The Ferranti Hand Prior Recognition Tablet can be connected to most computer systems. It's a connection that will foster increased sales for you.

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SUCCESS...IT'S IN THE BAG WITH SAINSBURY'S

Sainsbury's is the UK's leading food retailer. In our last financial year sales increased 17%, profit was up 20% to £107 million and we created an additional 3,300 jobs.

Our Systems Department is vital to our on-going success and is rapidly expanding to satisfy business growth. We are currently changing from ICL to IBM hardware and our present configuration comprises IBM 3033 and Atlas 10 mainframes.

We have a major commitment to a significant on-line database systems programme covering distributed stock control, purchasing and management information systems. This has created the following attractive career opportunities.

System Team Leaders up to £15,000

Responsibility will be to plan, organise, direct and control the activities of a systems development team. Your experience should include designing commercial systems in a real time environment utilising CICS. Knowledge of DL/1 would be an advantage. Self motivation, drive and the ability to build effective working relationships with user management is essential.

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★ relocation assistance, where appropriate

SAINSBURY'S



Senior Database Designer up to £15,000

As a senior member of the database design team, you will be involved in all aspects of detailed technical design as well as advising on technical issues. You should have a solid IBM programming and systems design background with at least 2 years' experience in the design and implementation of DL/1 under CICS or IMS DC. Experience of performance monitoring and IRC would also be useful.

Senior Analysts/Analysts up to £13,500

Responsibility will be to investigate, design and implement new systems. Experience must have been gained with commercial applications in an IBM environment and a practical knowledge of CICS and DL/1 would be an advantage. Familiarity with each stage of systems development is necessary as is the capacity to prepare and present management reports. Effective communication with systems staff and user departments is essential.

Interested in joining in our success... then please telephone Lorraine Cathersides on 01-921 6047 for an application form or to arrange an informal discussion with our Systems Managers. Alternatively please forward a detailed c.v. to her at J. Sainsbury plc, Wakefield House, Stamford Street, London SE1.

Portrait of a developing D.P. Installation

We have been retained by a newly formed Company to recruit a number of D.P. personnel into challenging positions within their fast growing Computer Department. The Company has been established to provide a Parts and Equipment distribution facility for one of the UK's leading Manufacturing Organisations.

From a base on the South East boundary of Birmingham, they will provide an autonomous service centred on IBM hardware - initially an IBM 3031 under MVS using Cincom's TOTAL database and ENVIRON 1.

At this stage in the Company's growth, excellent opportunities are available to experienced personnel seeking progressive career routes within the computing areas. Salaries are highly competitive, with the more senior positions offering lease cars and an attractive relocation package.

The Company's prestigious offices are easily reached by car, bus or train, and afford a high standard of working conditions.

If you would like to be considered for any of the positions shown below, contact **Grahame Murphy** or **Martin Stainthorpe** on 021-236 3781 (24 hour answering service), or Grahame on 021-778 2974 between 7.30 and 9.00 pm.



Database Administrator to £12,000 + Car

to control and direct database strategy. 'Total' database experience desirable but not essential.

Systems Programmers to £12,000 + Car

with good IBM systems programming background, preferably MVS orientated.

Project Supervisors to £12,000 + Car

to analyse and specify business requirements across a broad applications spectrum.

Personal Computing Consultant to £10,000 + Car

to provide personal computing advice, guidance and encouragement to user departments.

Scheduler/Librarian to £10,000 + Car

to be responsible for the scheduling of new systems and daily workloads on the mainframe.

Systems Support Supervisor to £10,000 + Car

to head a small team on programming support (COBOL/PL1) for operational and minor development systems.

Shift Leaders to £9,500 + Shift All.

supervising teams of Operators and ensuring smooth running of Operations Room.

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with computer operations experience from within an IBM MVS installation.

Programmers + Analyst/Programmers to £9,000

with COBOL or PL1 to maintain and enhance operational systems.

This is an exciting and challenging new venture, consequently the opportunities available represent a genuine chance to make a fresh start and follow a progressive career path.

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Cobol programming experience essential, and experience of Univac 1100 DMS and DPS would be an advantage.
We operate a dual Univac 1100/60 and are supporting Olivetti POS terminals through a telecommunications network. We can promise considerable technical interest in our applications.
These positions represent an opportunity for established programmers to expand their technical horizons.
Salaries in the region of £9K to £13K.
Benefits include 22 days holiday, free life assurance, generous sick pay scheme, staff canteen and discounts on television and video recorders.

Please apply in writing to:
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Personnel and Administration Officer
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PO Box 80
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Garththorpe Road
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Bucks
HP14 3DU

SAUDI ARABIA Tax Free Opportunities

A major computer consultancy organisation, already employing several British staff, is now seeking to recruit the following:
SYSTEM DESIGNER c. £24,000
Degree plus 7 years DP experience, 2 years of which as Cobol/Assembler Programmer and 5 years as a Design Analyst in Data Base Concept and Design, Transmission Techniques in an SNA environment, Structured Design Techniques and CICS Application Design. Also experience with DOS/VSE and VSAM files. (Ref. L2222)
SENIOR SYSTEMS ANALYST c. £20,000
Degree plus 8 years DP experience to include senior systems analysis experience of the above. (Ref. L2221)
ANALYST/PROGRAMMERS (2) c. £18,000
Degree plus 3 years programming, preferably in a real time environment using CICS. Also IDMS, PL1 and DOS/VSE (E). (Ref. L2220)
One year renewable contracts - free furnished accommodation - local transport allowance - 30 days UK leave p.a. with two air tickets provided.
Our clients need urgent UK interviews
14-19 December, so please send full career details, quoting the relevant reference no. to: Don McIntosh, Lansdowne International Limited, Lansdowne House, 38 Great Smith Street, Westminster, London SW1P 3BU.
01-222 3264/1676 (24 hours)
Lansdowne

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Target for the top and join our client whose main aim is to be "No. 1" in all their activities. If you have a sales background with particular emphasis in selling to the dealer and O.E.M. markets, feel that you can take this important step forward for '84 and live in London, Home Counties or the Midlands, then call CLINTON HARDY DAVIES on 01-543 4844, Ref. No. CHD.1342A.
STOP PRESS: Also looking for professional, commercial training person with experience of financial modelling, stock control, payroll, etc. It is a ground floor opportunity in a new division, Basic £10-12k + Car, Ref. No. CHD.1342B PLUS Micro Marketing, Commercial Application, Basic £18-20k + Car, Ref. CHD.1342C.
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All areas
West Germany

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VME Sys Support Base & Superstructure
Sys 25 Assembler
DRS CICS COBOL DRX
ME29 IDMS Analyst/Progs
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For more information about these or any opportunities telephone Phil Hart on 01-734-7394 or send your c.v. to the address below.

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TELEPHONE: 01-734 7394 24 HOUR ANSWERPHONE

Computational Mechanics

Computational Mechanics Centre

SOFTWARE ENGINEER c.£8K

Computational Mechanics develops and supports a number of software systems for CAD application. A vacancy exists for an engineer to write and support FORTRAN-based computer-aided engineering applications. The successful applicant will be required to have a degree in engineering and experience in FORTRAN programming. A knowledge of Finite/Boundary Elements and graphics would be an advantage.

SALES ENGINEER OOE £17K + CAR

Computational Mechanics is an independent company which specialises in engineering software. The company has an international reputation gained through its innovative approaches to analysis and CAD. The expanding sales of the company has created the need for a sales engineer.

Previous experience of selling FE systems would be an advantage but applicants with a successful record in sales of technical/engineering systems would also be of interest.

As this is a new position, the OOE of £17,000 have been estimated on current levels of sales. The successful candidate is expected to exceed this figure.

Both positions are based at the main offices of the company in the New Forest. The surrounding area provides extensive recreational facilities including beaches and is considered to be one of the country's most desirable areas.

Please reply to:

Computational Mechanics
Ashurst Lodge
Ashurst
SOUTHAMPTON SO4 2AA
and enclose c.v.

SAUDI ARABIA

FINANCE/ACCOUNTING/PERSONNEL PROFESSIONALS

circa £20,000 Tax Free

A major computer consultancy, already employing several British staff, is now seeking to recruit client orientated professionals with at least six years data processing experience specialising in either Finance and Accounting or Personnel/Industrial Relations Administration.

DP experience should include participation in systems analysis and design definition, user requirements, input/output data and format, computer processing and turn-around requirements, validation and verification, and the ability to instruct non-DP personnel in systems use.

Benefits include a tax free salary, free furnished accommodation, local transport allowance, 30 days UK leave per annum (15 days/6 months) with two air tickets provided and one year renewable contracts.

Our clients need is urgent, with UK interviews 14-19 December, so please send full career details quoting reference number L2223 to: Don McIntosh, Lansdowne International Limited, Lansdowne House, 36 Great Smith Street, Westminster, London SW1P 3BU.

01-222 3264/1676 (24 hours) **Lansdowne**
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Hydraulics Research, Wallingford, is a forward looking private sector company recently transferred from central Government, having a reputation extending over 35 years as a centre of excellence in civil engineering hydraulics. Our central computer facilities are based on an ICL 2872 and DAP; a distributed network of DEC PDP 11s serve the experimental facilities. Mini and micro-computers are also used for a number of other dedicated and general-purpose applications.

A vacancy has arisen for a Head of Computing Services Manager who will report to the Head of Technical Services and will be responsible for providing a broad scientific computing service to research staff. As well as the supervision of operations and systems and programming staff, the manager will take a leading role in the development of new systems to meet internal needs and is also involved, in collaboration with research staff, in formulating proposals for outside clients.

Applicants should have a degree in Computing or an allied, relevant discipline and have at least five years' experience of managing staff and projects in a computing environment. These should include analysis, programming and support, preferably involving the use of ICL and DEC equipment in scientific applications.

In addition to the salary quoted, the company provides a non-contributory index-linked pension scheme (equivalent to 21% of salary), flexible working hours and a subsidised staff restaurant.

For an application form please contact Mrs C. Thomas, Hydraulics Research Limited, Wallingford, Oxon OX10 9BA. Telephone 0491 36381 ext. 270. (6841)

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UNIX: SOFTWARE TOOL DEVELOPMENT

THE CHALLENGE

... is a vacuum. A vacuum soon to be filled with UNIX software technicians of the highest calibre joining a new company about to take the software tools market by storm.

Have you got what it takes to be part of this new team? Can you work at the forefront of software technology to create the products on which the success of the company will be built?

The new company has the backing of one of the world's most successful high technology organisations. Major contributors to the development of computing, they are now entering the growing market for software products with a high level of investment in people and facilities to ensure success.

UNIX will be the first development area and we are looking for experienced software engineers with the knowledge and personality to make a positive contribution.

THE OPPORTUNITIES

PROJECT LEADER circa £16,000pa
SOFTWARE DESIGNERS £12,000pa-£15,000pa
SOFTWARE PROGRAMMERS £7,500pa-£12,000pa

Successful applicants will have at least a degree and will certainly have experience of UNIX or related software. They will be self-motivated, innovative, professional and capable of taking conceptual ideas and developing creative but robust software tools.

For the more senior positions applicants should have experience of software tools, product development, team leadership and possess the communications skills needed to liaise with clients, the marketing function and other computing professionals.

THE FUTURE

The expanding market and a growing company will provide excellent career prospects for those in at the start. Initial salaries and later progression will be dependent entirely on merit. The excellent benefits package includes generous holidays, contributory pension and health schemes and relocation assistance will be available if appropriate.

The company's prestigious headquarters are located in London's Covent Garden with its fascinating atmosphere of market, restaurants and street theatre close by the cinemas and theatres of the West End.

If you are ready to build on your existing experience in an exciting environment, telephone now or post the coupon and we will send you an Application Form and Company Profile.

Please send an Application Form and Company Profile to:

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You will be able to demonstrate that in your career to date, the projects worked on have been successful and display a good analytical mind. Exposure to an end user environment would be beneficial, as would experience of IBM, RPG II or III.

This represents an opportunity to take a leap forward in your career development and with the Company prepared to sponsor full training in IBM GSD and RPG, then the only factor relevant is your track record to date, and more importantly yourself.

Situated in this very pleasant rural part of Oxfordshire, and with offices near Heathrow, they envisage a build up of the system to provide an efficient computer services facility throughout the Organisation.

With full relocation assistance and excellent benefits, this is an opportunity not to be missed.

To apply contact **Brian Harris** on 021 236 3781 (24 hour answering service) or on 0788 77732 (evenings till 9.00 p.m. and weekends), or send a résumé to the Birmingham address shown below.

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Queensway, Birmingham B3 3JY
021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-640 7161/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-760947

Senior Operator

Brantford International Limited are one of the largest freight forwarding organisations in the UK and are expanding internationally.

The company operate a hardware installation at their head office at Barking, Essex, based on the ICL ME29 generation of equipment and are seeking a senior operator who will be responsible for the efficient running of day-to-day batch/real time facilities, the selection and training of operational staff, and liaising on the development and installation of peripheral equipment when desired.

The successful candidate, probably 30 years plus, will have at least 12 months' experience on ICL ME29/2803/04 or similar equipment and will have proven supervisory experience.

Future prospects for the right applicant are extremely good and the importance of this position within the company will be reflected in the salary and benefits offered.

Please telephone or write for an application form to Mr R. Martin, Personnel Manager, Brantford International Limited, Regal House, East Street, Barking, Essex IG11 8EY. Tel: 01-584 7181 Ext: 285.

(6701)

Brantford International

DATA COMMUNICATIONS SPECIALISTS

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South Yorkshire

Due to expansion our client, an international banking organisation, requires Burroughs Hardware Programmers with Datacomms experience.

Programming languages COBOL & ALGOL. Excellent working conditions and technical facilities.

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(6889)

LONDON SCHOOL OF HYGIENE AND
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(UNIVERSITY OF LONDON)
Keppel Street, London WC1E 7HT

STATISTICAL AND PROGRAMMING ASSISTANT

A statistical and programming assistant is required in the Department of Epidemiology for a period of up to 18 months to work as part of a team concerned with two projects: the evaluation of a new anti-hypertensive drug, and determination of the factors influencing survival in normotensive and hypertensive subjects in different parts of the United Kingdom. The work will involve the use of standard statistical packages and the post is suitable for graduates with little previous experience as well as those with more experience who will be able to make an individual contribution to the research work.

Salary in the range £7,498 to £9,716 depending on experience and qualifications. Apply in writing to the Assistant Secretary giving full career details and the names and addresses of two referees. Closing date 18 December, 1983.

(6801)

Senior Systems Analysts ... Programmers Systems Analysts ... Programmers

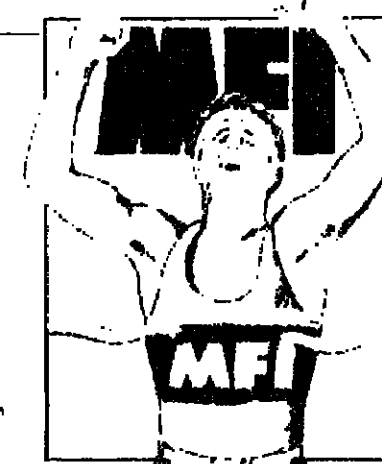
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DATA RETRIEVE,
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Have you got the right experience in these areas? If so, we'd like to hear from you. We are looking for people who are motivated and have a proven track record in the above areas.

As a Senior Systems Analyst or Programmer, you will be responsible for the design, development and testing of computer systems. You will also be responsible for the maintenance and modification of existing systems.

We need a motivated and experienced person to join our team. Please send your CV to: **Cripps, Sears**, 88/89 High Holborn, London WC1V 6LT. Tel: 01-404 5701 (day) or 01-492 1266 (evening).



Cripps, Sears

It is important to keep up front in the fast-moving world of computer systems. We are looking for people who are motivated and have a proven track record in the above areas.

As a Senior Systems Analyst or Programmer, you will be responsible for the design, development and testing of computer systems. You will also be responsible for the maintenance and modification of existing systems. We need a motivated and experienced person to join our team. Please send your CV to: **Cripps, Sears**, 88/89 High Holborn, London WC1V 6LT. Tel: 01-404 5701 (day) or 01-492 1266 (evening).

(6844)

IMMEDIATE FREELANCE ASSIGNMENTS

ESSEX
SYSTEMS PROGRAMMER
Must have good VAX experience with current practical working knowledge of VAX System Services, FORTRAN and MACRO 32. Simulation Software design and implementation experience preferred but not essential.

COMMS/CONSULTANT
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P066

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P067

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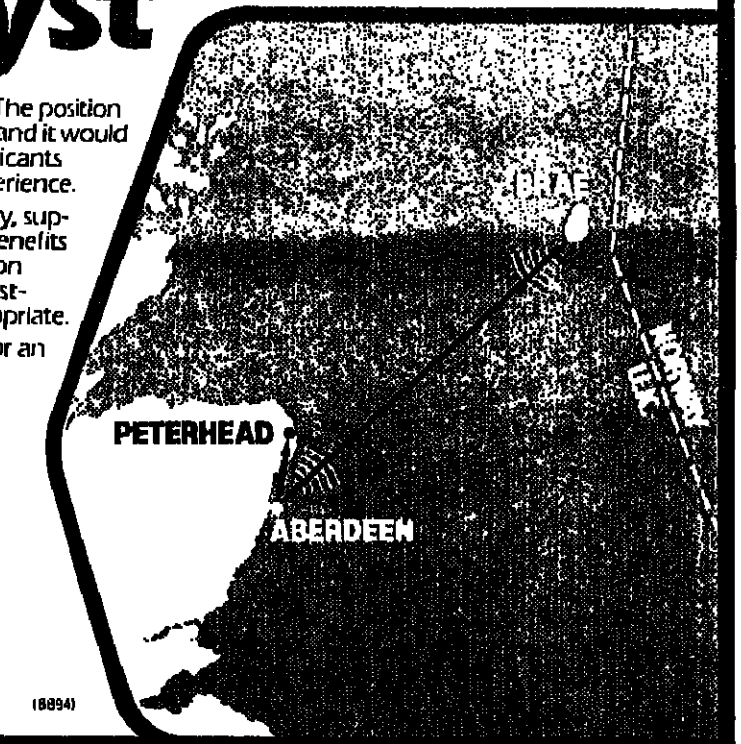
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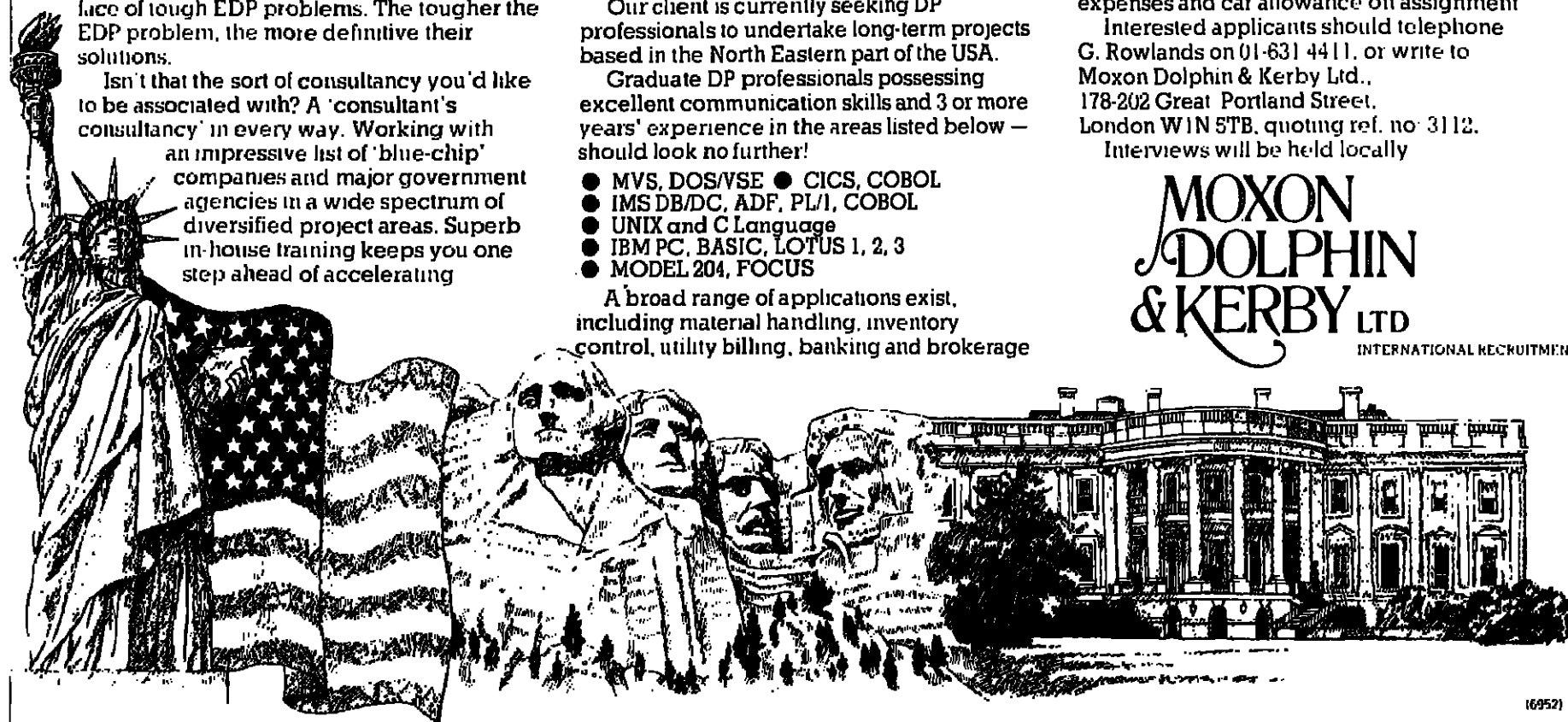
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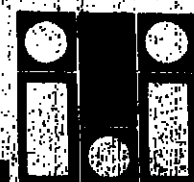
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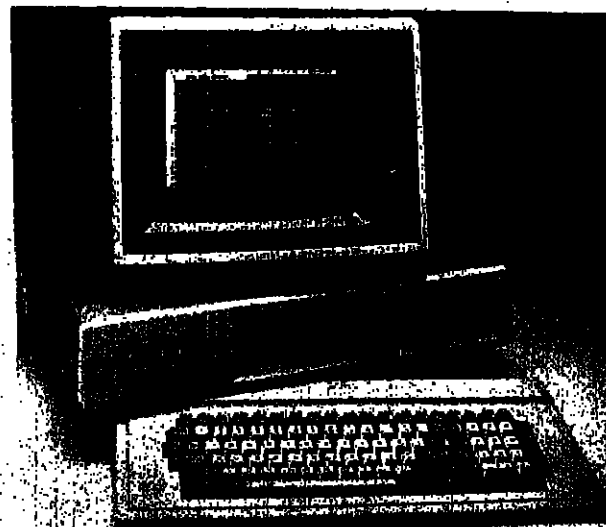
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One of those rare opportunities to join a Company, on the ground floor, knowing that the future is bright, secure and that the Organisation is set to experience dramatic growth from which you can only benefit.



Geveke Electronics Limited, has been appointed exclusive distributor for the UK by Eagle Computers, Inc., California. The extensive product range includes the Eagle PC (Illustrated) — User friendliness to a degree which may only be termed: simplicity with elegance — and the Eagle 1600.

To capitalise on this important step into the European market place, and provide the service upon which they pride themselves, Geveke now need to appoint a high-calibre individual to the position of Software Technical Support.

As the sole centre of competence in Software Technical Support, you will be wholly responsible for all Software aspects, for their User, Distributor and OEM base.

It is essential therefore that as well as experience of Technical Support in the mini/micro market, you possess the necessary customer-liaison skills and enthusiasm to make your mark.

An attractive salary and benefits package is offered, together with relocation, if appropriate.

For an immediate private and confidential discussion concerning this rare opportunity contact Nick Reid on 01 935 0671 during office hours or 01 644 1973 evenings or weekends. Alternatively send your C.V. to him at the London office.

Technical, Sales & Management Appointments

Specialist Computer Recruitment Ltd

SOUTH
James House, 46 James Street,
London W1M 5HS
01-935 0671/488 0461

MIDLANDS & INTERNATIONAL
36-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-236 9781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
061-838 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-640 7151/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-760947

West London

PROJECT

ANALYST PROGRAMMERS SALARIES CIRCA £14.5K

As part of their ongoing expansion programme, our Client, a computer services subsidiary of a major international group, is looking for further analyst programmers at all levels to work on existing and new projects, including database systems.

Our Client provides a wide range of information technology services to major international organisations through a mainframe based package.

The Client is currently looking for analysts with the following skills: IBM AS/400 running under OS/VS, COBOL, PL/I, FORTRAN, BASIC, C, and Pascal.

Major facilities and experience: plus technical experience in the use of the above languages, but it is essential that they have the potential to progress their careers in Information Services.

Naturally, the compensation package is as you would expect from one of the leading international groups.

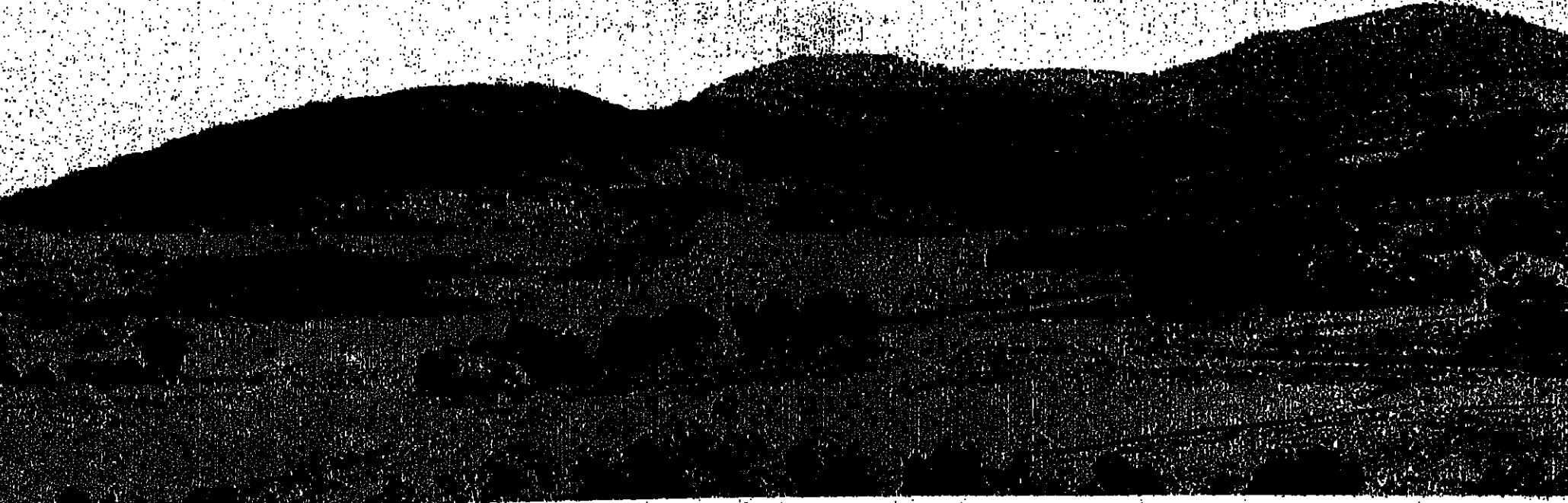
For further information, and to arrange a confidential interview, contact Tony Parker, Branch Manager, in the confidential services unit.

In confidence to: Eurolink Computer Services, 100 Post Office, Brighton, E. Sussex, BN1 1ZV.

EUROLINK

COMPUTER SERVICES LIMITED

Prospects in Chester... for you to join a highly motivated development team



COBOL Programmers £7-8.5k plus benefits

North West Securities — part of the Bank of Scotland Group — is one of the country's leading finance companies with Head Office in Chester.



Having successfully completed the first phase of a five year plan to fully computerise our branch and Head Office operations, we have all 70 branches online to our central mainframe. We are about to undertake major new developments and now have openings for a number of programmers. A solid COBOL background is required, preferably gained in an online and database environment, together with the enthusiasm and commitment to succeed in a busy and fast growing department. In return we can offer you:

- ★ Opportunity to broaden your experience using some of the very latest database and online techniques
- ★ Development of new financial applications for our Honeywell DPS/8 using GCOS/8 operating system

- ★ Small project teams
- ★ Good sport and social activities
- ★ Remuneration package which includes good salary, bonus, BUPA, Contributory Pension, Preferential Loans, and Subsidised Mortgage after a qualifying period.

Act Now

Further details of these excellent opportunities are available by telephoning our Recruitment Consultant, Graham Pepper on Tel 061-491 1666 during office hours or Adlington (0257) 480291 evenings and weekends. Alternatively write to him at Computer People North, (FREEPOST), Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2UD.



The Development of Technology

ACT are now firmly established as the UK's most successful Computer Company.

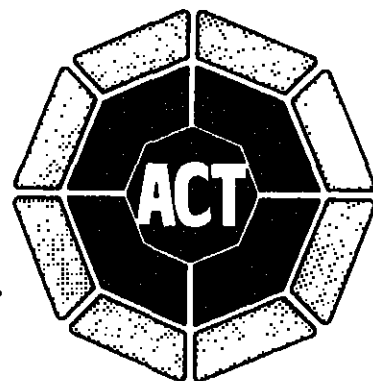
Their record of expansion is by anyone's standards exceptional, and all indications are for even further significant growth in the future.

A major factor in their success to date has been the considerable investment made in research and development, which resulted in the design, development and manufacture in-house, of the Fourth Generation Personal Computer — APRICOT. This is a computer which has already received international acclaim, and is making a significant presence in world markets.

This commitment to research and development they consider a vital component in ensuring their long term future, both in maintaining their dominant position at home, and further developing their success worldwide.

ACT (Advanced Technology) Limited is the research and development arm of the Group, and undoubtedly represents one of the leading microcomputer development teams in the country. Based in Birmingham, this team will shortly be moving to new purpose-built premises, where every facility, including advanced aids such as VAX hardware and CAD/CAE etc, are provided for total hardware and software development.

In view of present and future development to be undertaken, opportunities now exist for persons with the following backgrounds and experience to join this team.



Senior Software Engineer -Operating Systems...

to £12,000

This position requires a candidate, preferably qualified to Degree standard, with 2/3 years experience of operating systems, gained within a mini or micro environment. Ideally, experience of any of the following — MS-DOS, CPM/86, C or PASCAL — is sought, although overall ability is of prime importance.

Software Engineer— Applications...

to £11,000

Qualified to Degree standard, you will have around 2 years' experience within a mini or micro workstation environment, in any of the following areas:

integrated communications applications; user interface; database.

Again, whilst by no means essential, experience of any of the following — MS-DOS, CPM/86 or C — would be most welcome.

Design and Development Engineers

to £11,500

Candidates, qualified to Degree standard or equivalent, should have at least two years' experience of modern microprocessor based technology, and have a good knowledge of LS1 and TTL. Although a dominant hardware background is required, any experience of software, particularly ASSEMBLER or PASCAL, would be most welcome.

All these positions are integral to the Research & Development Group and offer unique opportunities to young, ambitious individuals, who wish to develop their careers within a stimulating and challenging environment, where ability is recognised and rewarded.

An attractive commencing salary will be paid, and other benefits include full relocation expenses, if required, to an area of the country where a wide choice of reasonably priced accommodation is available, and where excellent communication links and public transport facilities make a variety of living styles possible.

For further information regarding these positions, and to arrange an initial interview, please contact PETER LKES on 061 833 0427 (24 Hour Answering Service) or 061 439 9595 (Evenings and Weekends before 9 p.m.)

Initial interviews will be held in your local SCR Regional Office.

...Total Computing

Technical, Sales & Management Appointments

Specialist Computer Recruitment Ltd

SOUTH
James House, 48 James Street,
London W1M 6HS
01-935 8871/488 6481

MIDLANDS & INTERNATIONAL
35-37 Broad Charles Street,
Queenway, Birmingham B3 3JY
021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 3SE
061-933 6427

BELGIUM
Avenue Louise 327
B-1050 Brussels
010 322 840 7151/71

HOLLAND
Wolvenparkweg 82,
1071 HM Amsterdam
010 3120-780847

NEW ZEALAND SYSTEMS ANALYSTS OR SENIOR SYSTEMS ANALYSTS DEVELOPMENT METHODOLOGIES DATABANK — A WORLD LEADER

Databank Systems Ltd., is unique in its central role of handling the EDP needs of all the New Zealand trading banks as well as operating a substantial commercial bureau operation.

We have developed and operate a nationwide distributed network which links 17 computer centres and hundreds of bank branches. The hardware includes 20 mainframes (ranging from IBM 3083's to IBM 4331 (Group 2) machines) together with numerous mini computers and micro processors. Development activities are concentrated in our head office in Wellington (New Zealand's capital city). Current major developments include the re-development of the basic banking system using the information engineering methodology.

The department for which we are recruiting has the important role of supporting the use of information engineering by the applications development teams. This support is provided through the provision of internal consultants as well as evaluating current practices, tools and aids, and introducing improvements.

Our vacancies will interest those who are already senior systems analysts or equivalents, and who have a good knowledge of information engineering, data analysis or a related structured analysis technique. They will be able to demonstrate a professional approach to technical problems and human relations as well as an ability to think logically and to communicate well.

If you are definitely interested in a career with one of the world's leaders in EDP please air mail a resume to:

Manager
Staff Services
Databank Systems Limited
PO Box 3647
Wellington
NEW ZEALAND

Two of our senior managers will be in the UK early 1984 to personally discuss what Databank and New Zealand can offer.

(6839)

GROUP DATA PROCESSING MANAGER

£15,000 + CAR

FERGUSON PRINTING & PACKAGING LTD is the divisional holding company of a successful and expanding international public industrial holding company.

The Division currently operates three IBM System 34 computers and is planning to install hardware in all its 13 companies, and to develop both its commercial and production software.

This is a new position and it is envisaged that the successful applicant must be a complete professional, able to provide advice and guidance to company executives on D.P. matters, an in-depth knowledge of IBM 34 and MAPICS, willing to install new releases of S/34 and S/36 software and program in RPG II.

He/she, whilst based in London, must be prepared to travel frequently within the UK and overseas for short periods to install and maintain new installations and provide operator training with hardware and software evaluation.

Application in writing only, giving career and experience details to:

FH G. H. Solly
Company Secretary
34 Old Queen Street
Westminster, London SW1H 9HP
Ferguson Printing and Packaging Limited (6804)

The Moving Picture Company

Computer Animation Programmer

The Moving Picture Company is situated in the heart of London and is the best equipped video facility in Europe. We require a person to develop and operate our 3D imaging systems. Programming would at first be mainly in BASIC and later PASCAL using several Hewlett Packard computers.

You should have practical skills in 3D graphics and the ability to work efficiently under pressure. Experience in working with film and video would be a great advantage.

Applications in writing only with details of relevant experience to Maggi Allison,
The Moving Picture Company, 28 Noel Street, London W1. (6795)

CONTRACTS

IBM

MVS SYSTEMS PROGRAMMER
OS/VS1 SYSTEMS PROGRAMMER WITH CICS, ROSCOE
IDMS (ADS ON-LINE PREFERRED) COBOL ANALYST/PROGRAMMER
3083 SAS (PL/1 PREFERRED) ANALYST/PROGRAMMER
DOS/VSE CICS, DL/1 COBOL ANALYST/PROGRAMMER
4341 COBOL PROGRAMMER WITH INQUIRE
DOS/VSE SYSTEMS PROGRAMMER
SYSTEM 34 RPG II PROGRAMMER
SYSTEM 38 RPG III ANALYST/PROGRAMMER
SYSTEM 38 RPG III PROGRAMMER (INSURANCE)

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LONDON
MIDDLESEX
MIDDLESEX
SOUTH COAST
SURREY
LONDON
LONDON
KENT

ICL

VME 2900 TOTAL, SCL, TPS PROGRAMMER
VME 2900 TECHNICAL SUPPORT
2904/ME29 MTS, COBOL PROGRAMMER
VME 2900 ANALYST/PROGRAMMER
VME 2900 IDMS, TPMS, COBOL PROGRAMMERS
VME 2900 IDMS, COBOL PROGRAMMERS

SURREY
SOUTH LONDON
DEVON
TYNESIDE
BIRMINGHAM
SOUTH COAST

OTHERS

UNIVAC 1100 COBOL PROGRAMMER
PRIME, PICK PROGRAMMER
INTEL MDS, ASSEMBLER PROGRAMMER
HP 3000 COBOL PROGRAMMER
TANDEM COBOL PROGRAMMER
TANDEM ANALYST (BANKING)
VAX, VMS, PASCAL & C SOFTWARE PROGRAMMERS
SIRUS 1, D/B II PROGRAMMER (FINANCIAL MODELLING)
HP 3000 RAPID PROGRAMMER
PDP RMS, RTL2 (MACRO II PREFERRED)
DG BUSINESS BASIC PROGRAMMERS
PROGRAMMERS FOR IBM 4341/WANG CONVERSION
PROGRAMMER FOR ICL GII/HP CONVERSION

ESSEX
SURREY
WEST SUSSEX
BERKS & MIDDLESEX
LONDON
LONDON
BERKS
LONDON
LONDON
OXFORD
WEST LONDON
KENT
KENT

For details of these and other on-going requirements please contact Lorraine, Lynne, Wendy or Tony at KPG, or alternatively contact Lorraine on Walton-on-Thames 245562 (evenings and weekends).

ENGINEERING

RF DESIGN ENGINEER
DIGITAL DESIGN ENGINEER
ELECTRONIC COMMS ENGINEER
ANALOGUE ENGINEER
TEST EQUIPMENT ENGINEER
PROCESS CONTROL ENGINEER
SOFTWARE ENGINEER
COMMISSIONING ANALOGUE ENGINEER

SUSSEX
SUSSEX/SURREY
SUSSEX
SUSSEX/SURREY
SURREY
SURREY
SUSSEX/SURREY
SURREY

Contact Lynne at KPG or on 01-943 4140 (evenings and weekends).

KPG
01-948 5922

KPG Computer Support Services Limited
Cobden House, Park Lane, Richmond, Surrey, TW9 2RA



Merchant Banking

City of London

Our client has twin UNIVAC 1100/60's servicing a network which is currently being expanded to support over 100 micro-computer based terminals. If you join this well-established DP department you will be producing systems for one of the City's leading Merchant Banks and will, therefore, be gaining the following valuable benefits in addition to the salaries quoted.

- Mortgage Subsidy
- Non-contributory Pension
- Profit Sharing
- Free Life Assurance
- BUPA
- Interest-free Season Ticket Loan

Please contact Joan Ainsworth on 01-681 8311 or write to her at C.S.S., 6th Floor, Carolyn House, Dingwall Road, Croydon, Surrey, CR0 9XF.

Analyst/Programmers

£9,000 to £15,000 plus benefits

Our client is working on a wide variety of financial systems and, in addition to a sound background in COBOL programming, is looking for experience of some of the following:

- Investment systems including Portfolio Management and Valuations
- Dealing Room Systems
- Foreign Exchange Systems

Previous design and implementation experience is called for, together with the ability to liaise with users at many levels.

Computer Search & Selection (Southern) Ltd

COBOL in Surrey

DEC PDP-11's and VAX

Our client is a computer services company within a well known group, which is currently expanding to take on more development work. Group benefits include a good pension scheme and profit-sharing/productivity bonus. They have a variety of hardware, which includes DEC (PDP-11 and VAX) and micro computers.

Experience gained in a commercial environment (accounting, payroll, personnel records) or manufacturing/production control, would be of particular interest. The systems to be developed will be both on-line and batch. In addition, you will be given the opportunity to broaden your experience by implementing micro-based packages.

For these and other positions please contact Joan Ainsworth on 01-681 8311 or write to her at Computer Search and Selection, 6th Floor, Carolyn House, Dingwall Road, Croydon, Surrey, CR0 9XF.

Senior Programmers

to £13,000

You will already have had at least 3 years' programming experience including, ideally, some supervisory experience, as you will be responsible for the technical supervision of programmers. Additional requirements will be the ability to communicate with non-technical users and to produce program specifications.

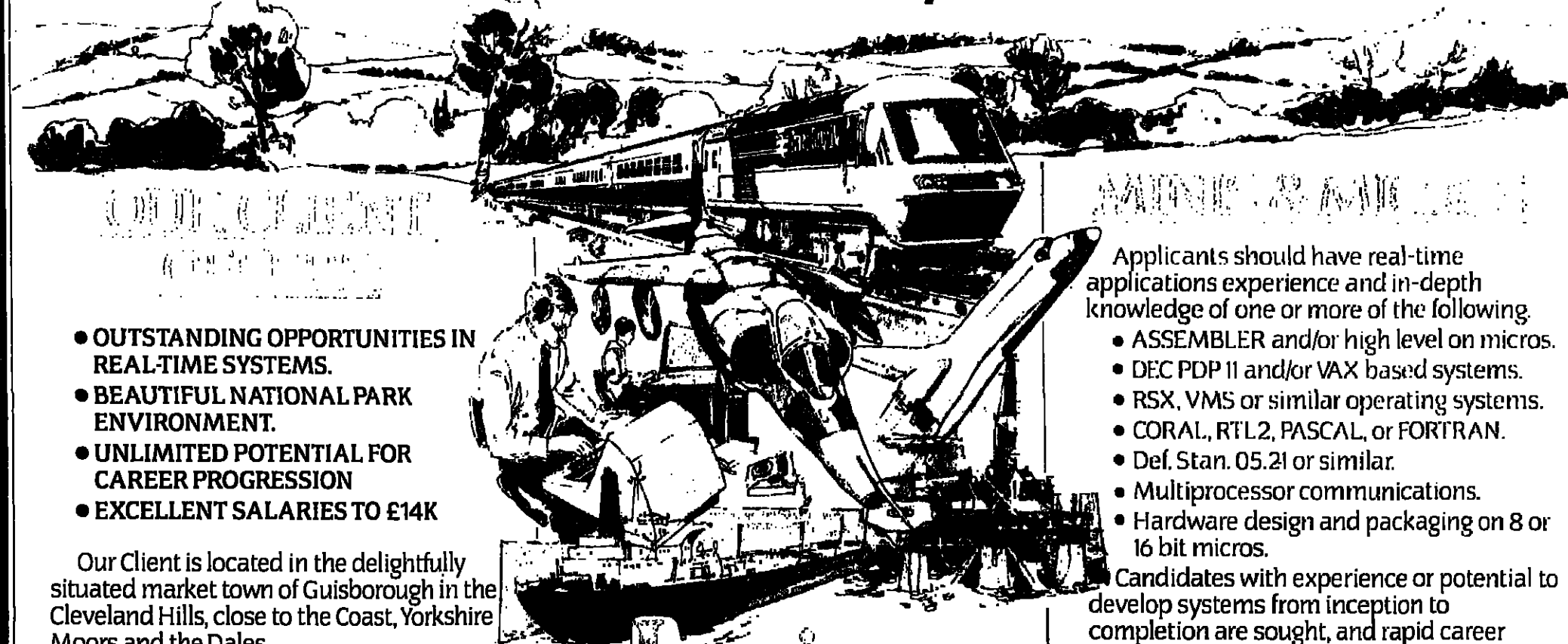
Programmers

to £11,000

If you have been programming in a relevant COBOL, for at least one year, and would like to join an enthusiastic team, where your skills will be recognised and you will be given the opportunity to develop these, we should like to hear from you.

Computer Search & Selection

SYSTEMS AND SOFTWARE ENGINEERS AND ANALYST/PROGRAMMERS



- OUTSTANDING OPPORTUNITIES IN REAL-TIME SYSTEMS.
- BEAUTIFUL NATIONAL PARK ENVIRONMENT.
- UNLIMITED POTENTIAL FOR CAREER PROGRESSION
- EXCELLENT SALARIES TO £14K

Our Client is located in the delightfully situated market town of Guisborough in the Cleveland Hills, close to the Coast, Yorkshire Moors and the Dales.

Working within a major Systems Services Group, vacancies range from Programmers to Project Leaders. Opportunities for project experience on a wide variety of applications exist in all cases.

Lorien
COMPUTER SERVICES LTD
We've got it!

O.C.S. HOUSE - SERVA ROAD LEEDS LS7 1NJ

Applicants should have real-time applications experience and in-depth knowledge of one or more of the following.

- ASSEMBLER and/or high level on micros.
- DEC PDP 11 and/or VAX based systems.
- RSX, VMS or similar operating systems.
- CORAL, RTL2, PASCAL, or FORTRAN.
- Def. Stan. 05.21 or similar.
- Multiprocessor communications.
- Hardware design and packaging on 8 or 16 bit micros.

Candidates with experience or potential to develop systems from inception to completion are sought, and rapid career progression can be expected.

Contact Steve Sykes or John Mason on Leeds (0532) 45591 during office hours, or Steve Sykes on (090484) 350 evenings and weekends, or write to this address, quoting REFERENCE CW/601

NEED OR WILL BE RIGHT?

No - there are always limited opportunities for forward looking people, especially in the field of computers. Our client, situated in the Eastern Province of Saudi Arabia, has made massive continuous investment in the field of computers. Currently they are State-of-the-Art computer systems including the IBM series 303 and 3081 and a wide range of mini and micro computers including DEC/VAX, PDP/APOINT and ALGOL. Major medium and small scale projects are currently being developed and more are planned. To ensure the continued success of this long term commitment, recruitment of computer professionals with the following skills is essential:

- Systems Analysts/Programmers with a minimum of 5 years' experience in PL/I, OS/JCL and COBOL; a knowledge of IMS would be an advantage.
- Business Systems Planners with a broad DP background and an understanding of strategic applications planning; minimum experience would be an advantage.
- Systems Analysts/Programmers for end user support, especially with DEC/VAX or IBM PC experience. Opportunities also exist in the WANG environment.

- Technical Planners with a broad DP background, especially those with mini/micro experience.
- Salaries up to £23,000.

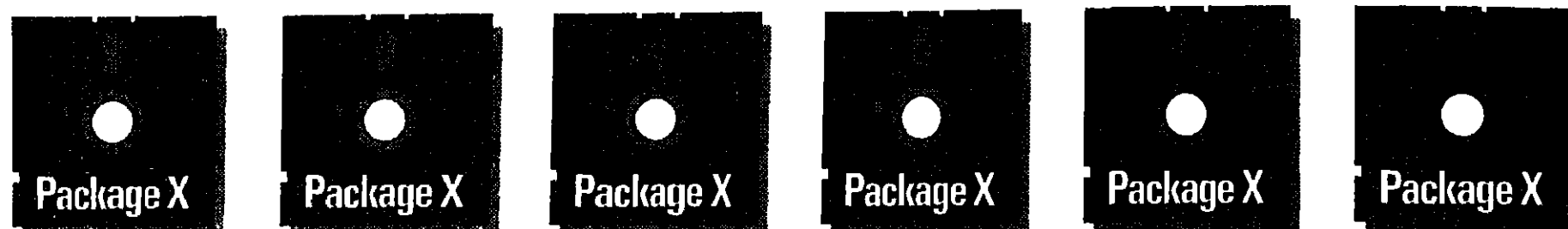
Candidates for these permanent positions should be educated to HNC/HND/degree level and will be rewarded with a complete remuneration package, subsidised accommodation and an extensive range of leisure facilities including squash, tennis, soccer, rugby, cinema and water sports are provided. The Company also operates its own libraries, TV and radio stations.

Interviews with a Company representative are scheduled for January 1984. You should telephone now for application details and further information. Contact Caroline Tee on: 01-723 4053 or write to: Comcap Resources Limited, 26 Chilworth Street, London W2 6DT.



The need for computer personnel is on-going and if you are not available at present, register now for future opportunities.

Micro Software Package Evaluation



Spot the difference

Southern England

Up to £15,000

Everyone who has been involved in selecting micro software will recognise the problem: the variety and choice of products can initially be overwhelming.

Consider then the challenge facing the team of software professionals whose task will be to find and evaluate new micro software products for the UK's most comprehensive library of integrated micro software packages. This library will support a revolutionary new generation of versatile micro computers, destined to become a world-wide market standard.

We're talking about working for a leading manufacturer, in a role that will embrace not just in-depth technical assessment of the function and useability of a wide range of software products but also detailed investigation of the commercial viability of the packages in both vertical and horizontal markets.

To successfully meet this challenge and reap the substantial career

benefits inherent in joining a young team at an early stage of its development, you'll be aged 23-30, of graduate status with a background that has embraced some 'hands-on' experience of applications programming for micro or mini systems. Beyond this basic requirement your background could reflect almost any sector of the industry - from working at a technical level within a sophisticated systems environment to providing a consultancy service as part of a systems house, manufacturer or dealer. It's even possible that you are currently developing the very packages my client requires.

Whichever applies, you'll be able to work on your own initiative, eager to learn and possess a level of potential that can be developed towards management.

To discuss these opportunities in greater detail, call **Hugo Fair** on 01-828 6846 or send brief career details to: **NSH Associates**, 205 Victoria Street, London SW1E 5NE

NSH

Sales and Marketing

Guildford based

Realistic first year minimum

c.£20,000+car

Our client is part of a group which may fairly be described as a 'household name'. It is a new software house that the group has set up to specialise in specific vertical markets. These markets are Property Management, Commodity, Broking and Export Shipping and, within them, the company will be providing a wide range of solutions to business problems, which may take the form of consultancy services, bespoke software, applications packages (including general accounting) and hardware. Hardware will cover the whole range of DEC equipment, together with the ACT SIRIUS and APRICOT micro-computers. Remuneration will be guaranteed at £20,000 p.a. for the first 6 months and the success of the Company so far would indicate that £30,000 p.a. to £40,000 p.a. should be very achievable.

If you are already successfully selling, in areas that are relevant to our client's aims, and are capable of growing with the company, please contact Joan Ainsworth on 01-681 8311. Computer Search & Selection, 6th Floor, Carolyn House, Dingwall Road, Croydon, Surrey CR0 6XF

Computer Search
& Selection

COMPUTER E-X-P-A-N-S-I-O-N OPPORTUNITIES IN THE RETAIL INDUSTRY

Our client is a major multiple in the field of HiFi, TV, Video and Micro Computers. They are currently in the process of expanding their Sperry 90/30 systems and will be replacing them in March 1984 with two Sperry 80/8's to be followed later in the year by additional equipment. They are also introducing Mini systems and a major move will be in the installation of Electronic Point-of-Sale.

Due to this expansion Laskys are enlarging and re-organising their in-house DI* operation and have immediate requirements for the following staff:

PROJECT MANAGER

For this position you will require extensive systems and management experience. You will take over full responsibility for the day-to-day management of all systems development. In addition, you will be responsible for the definition of standards, project control, training and as part of the DI* Management Team, the overall strategy of the department.

PROJECT LEADERS

You will be an ambitious Systems Analyst fully conversant with all its aspects who now wishes to enlarge on that base by taking responsibility for a multi-disciplined team of DI* professionals. You will be in day-to-day contact with non DI* staff and will be responsible for all aspects of the project from initial concept through to testing and implementation.

SYSTEMS ANALYSTS & PROGRAMMERS

Several vacancies exist for both systems and programming staff to work in a Project Team environment. Ideally, you should have experience on Sperry equipment but for the right candidates we will give all the necessary training. You will have the opportunity of working on some of the most modern systems available as well as the chance to trial in new methods and techniques for Mini and Sperry systems.

As this is the first stage in a planned period of growth there will, from all the above positions, be opportunities over the next few years for advancement, training and additional responsibilities.

The Company offices are conveniently located in Hendon, NW9 and are close to both Main Line and Tube stations and have easy access to both the M1 and North Circular Road.

The positions attract excellent salaries, first class benefits and genuine career opportunities.

For any of the above positions please telephone **George Shaw** (01) 549 9236 (24 hour answering service).

LASKYS

Sloangate

Shaw Recruitment Advertising Limited
Domestic House, 77-79 London Road, Kingston-upon-Thames,
Surrey KT2 6BA. Telephone 01-549 9236
Telex 918407 STARAD G

The substantial growth and continued investment by this Aerospace and Defence Systems Company in major research and development projects, has created the following vacancies at their research and product development centre in the West of England.

SENIOR SOFTWARE ENGINEER

To join a small team working on the development and integration of Ada based software tools and techniques.

The successful candidate must be innovative and have the ability to undertake feasibility studies, design, implementation and to liaise effectively with customers. He or she will have previous experience in at least some of the following:

- Translator Design
- Real-time software
- Distributed Processing
- Modern Programming Languages
- Formal software verification techniques
- Large scale software development
- Configuration management

IMAGE PROCESSING ENGINEER

To secure and develop the research group's image processing capability, working in a software systems team involved in state-of-the-art development at the forefront of technology. The work will involve feasibility studies, design, implementation and customer liaison.

Applicants will have familiarity with a range of image acquisition, characterisation, processing, analysis, interpretation and presentation techniques and technologies.

SENIOR CAD/CAE ENGINEERS

To be responsible for the creation, installation and development of integrated CAD systems, the objectives of which include the electrical performance and logical validation of digital designs implemented in V.L.S.I. full custom, part custom and off-the-shelf technologies.

Applicants will have relevant training/experience including electronic design and the software design of relevant CAD systems.

For all these positions, applicants should be graduate engineers with relevant experience.

For a confidential discussion concerning these opportunities, phone Marc Woolmer on 045-383-4877 or write to him with full career details at:

Marc Woolmer & Partners,
Suite 545, Chancery House,
53/64 Chancery Lane, London WC2 1QU.

PERSONNEL & SELECTION CONSULTANTS

Marc Woolmer & Partners

BOX NUMBERS

Box number replies should be addressed to:

Box Number

c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 6AS

TECHNICAL MARKETING SUPPORT WITH ACORN COMPUTERS

Cambridge c.£13,000 p.a.

Acorn Computers, leaders in the design and development of microcomputer technology, are seeking to strengthen their marketing team by the addition of two key personnel. Responsibilities will include identifying future markets, evaluating R&D projects, conducting full technical evaluations of competitive products, co-ordinating field trials, and briefing the sales force on new products.

MARKETING SUPPORT ANALYST HARDWARE

A sound knowledge of hardware engineering is required. This should cover processors and their supporting chips, the design features of peripherals including printers, monitors, keyboards and communications devices, and how they are combined to form micro-computer products.

MARKETING SUPPORT ANALYST SOFTWARE

A wide knowledge of applications software is required, including business/accounting packages, word processing, educational and entertainment software, languages and operating systems. The ability to make an analytical comparison of competitive products from the point of view of the user is essential.

The requirement is for graduates in a scientific or technical discipline with a minimum of five years' experience in the computer industry, and a good knowledge of micro-computer technology. Candidates will need to demonstrate strong analytical and communication skills, including the ability to write clear and concise reports. They will also require the inter-personal skills to liaise effectively with staff at all levels in other departments.

Write with full career details to David Batten, BSc (Eng.)
Clive Newton & Partners
Executive Recruitment Consultants
Business & Technology Centre
Bessemer Drive
Stevenage
Herts SG1 2DX

Quoting CN/110/CW who is advising on these appointments

**ACORN
COMPUTER**

Computer Operator

Solihull c.£7,000

3i is an independent private sector group concerned with the creative use of money in business.

We are looking for a Computer Operator to join our Group Accounts Unit based at Solihull.

Candidates should have a minimum of two years' experience of running on-line mini or mainframe computer installations, including remote equipment and telecommunications, on a day to day basis. They should be aware of security considerations and would be expected to control the use of the computer to provide optimum service to users.

Attractive financial sector benefits include concessionary mortgage facilities, free medical insurance, a non-contributory pension scheme and free lunches.

Interested? Please phone (reversing the charges) or write for an application form: Julie Graham, Investors in Industry plc, 91 Waterloo Road, London SE1 8XP. Tel: 01-928 7822.

3i

Investors in Industry

Computing & Electronics
myriad
Recruitment Consultants

Could you be a Recruitment Consultant?

Reading

£12,000-£15,000
(1st Year)

We wish to appoint additional consultants to our Reading Office. Experience in Computing and Electronics recruitment is not essential since we are able to offer a comprehensive training programme to people looking for an interesting career move.

As one of the largest consultancies specialising in Computing and Electronics recruitment, we have both the resources and expertise to enable you to develop the skills needed to succeed in this challenging and rewarding work you must have a background in the computer industry, such as software development, systems analysis or any sales oriented position. Without this essential grounding you could not be expected to give career advice to applicants or advise clients in major recruitment assignments. You must also possess the enthusiasm and self-motivation to succeed in competitive sales situations in which you will have the freedom to work very much on your own initiative.

If you do not have recruitment experience the wide range of activities encompassed by the work will surprise you. The first year's salary package is enhanced by excellent conditions of employment including a Company Car scheme.

To find out much more about the varied and interesting role as a Myriad Recruitment Consultant, contact us to arrange a discussion with one of our Directors, and we will tell you about the long term career opportunities available.

Please telephone our Reading Office quoting reference RW/3/0812/CW/C.

Computing & Electronics
myriad
Recruitment Consultants

30 Fleet Street, London EC4Y 1AA
Telephone: 01-353 0981 24 hours
25 South Street, Reading, Berkshire RG1 4QU
Telephone: Reading (0734) 591151 24 hours

SYSTEMS PROGRAMMERS

LONDON AND HOME COUNTIES £16,000 + 2-litre CAR
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(0872)

JOURNALIST
Middle East Computing

The Middle East is one of the world's fastest growing computer markets with the very latest computer technology being installed throughout the Arab oil states

Middle East Computing is the leading journal in this market and seeks a journalist to write about the exciting developments which are now taking place. Essential requirements: ability to write and express technical material in a clear and readable manner; a good grasp of computing technology. Knowledge of the Middle East market would be an advantage but is not essential; production skills would also be useful.

Based in Sutton, Surrey, the job offers considerable variety: news reporting, feature writing and journal production plus regular trips to the Middle East

Salary: £9,115 p.a.

Write or phone Sarah Hardcastle, Editor, Middle East Computing, Times House, Throwley Way, Sutton, Surrey. Tel: 01-661 8760

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PUBLIC SECTOR APPOINTMENTS

Suffolk County Council

Highways Department

The following staff are required as a result of the restructuring of the Technical Services Group to meet the demands of Direct Labour Organisation legislation, and to further the introduction of information technology systems.

For the Development Team:

SENIOR ANALYST/PROGRAMMER

Post H81

Grade SO2: £9,845-£10,539 p.a.

Applicants should preferably have a degree or equivalent qualification in Computer Studies or similar numerate discipline, be a member of a professional body, and have at least 4 years experience in programming and analysis in an engineering or scientific field.

ANALYST/PROGRAMMER

Post H79

Scale 6/501: £8,154-£9,660 p.a.

Applicants should preferably hold an HNC in Computer Studies or equivalent qualification in a numerate discipline and at least 2 years experience in programming and analysis in an engineering or scientific field.

For the Support Team:

TECHNICAL ASSISTANT

Post H63

Scale 4: £6,264-£7,005 p.a.

The post holder will initially be appointed on a two year temporary contract renewable subject to review. The appointed person will be responsible for providing support and monitoring the day-to-day use and operation of the Department's Computer resources to meet the Department's data processing requirements, particularly those in remote Area offices. Applicants should preferably hold an HNC or equivalent qualification and have 3 years experience in Civil or Highway Engineering design or maintenance, and hold a current driving licence.

The County has a dual ICL 2972 mainframe computer serving an extensive terminal network. The Department additionally has a Puma mini-computer, several microcomputers, together with Tektronics and Benson equipment for graphics.

Generous relocation expenses payable in certain circumstances. Further details and application forms obtainable from The County Surveyor, St Edmund House, Rope Walk, Ipswich IP4 1LZ, tel. Ipswich 55801, ext. 6309, returnable by 21st December 1983. (6827)

UNIVERSITY OF CAMBRIDGE

COMPUTING SERVICE

MICROPROCESSOR APPLICATIONS

There are two vacancies in the University Computing Service to provide assistance to University departments in the application microprocessors.

Applicants should have a degree or equivalent qualification and programming experience preferably in a university environment. Hardware experience is highly desirable for one of the positions and of advantage for the other. Appointments will be to Computer Officerships on a salary range from £5,795 to £10,710 (US\$).

Application forms may be obtained by writing to Miss J. A. Bailey, Acting Director of the Computing Service, Computer Laboratory, Corn Exchange Street, Cambridge CB2 3QG. The closing date for applications is 9th January 1984. (6830)

Bristol Polytechnic

Computer Studies and Mathematics Department

PRINCIPAL LECTURER IN INFORMATION SYSTEMS

Ref: No. L158

Applications are invited from good honours degree graduates, preferably with industrial experience and a relevant higher degree, for a Principal Lectureship in Information Systems, with possible future election to a Readership.

The successful candidate will contribute to research and curriculum development, and to the teaching of Information Systems, both theory and practice. Information Systems is a major subject within the Department's research programme and the degree teaching programme. It also features heavily in serviced courses, particularly in the Faculty of Accounting, Business and Management. Information Systems also features in a major Bristol Polytechnic Open Tech contract involving Plesey Marine. Candidates should have an understanding of behaviour in organisations, in addition to computing, as a basis for the construction of suitable models of user systems.

Salary scale: £12,518-£12,839 (bar) £15,744 per annum.

For further details and an application form, to be returned by 9th January 1984, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frensham, Bristol or ring 08262, ext. 216 or 217.

Please quote Reference Number L158 in all communications. (6835)

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LECTURER II/SENIOR LECTURER IN COMPUTING

The Polytechnic is fully committed to an expansion in the teaching of computing and has now created a number of "new blood" posts for people with relevant research and industrial experience who wish to apply their skills to the benefit of students' specialist computing courses at degree and diploma level.

Particular expertise in one or more of the following areas is desirable: Computer Graphics, Expert Systems, Knowledge-Based Systems, Computer Architecture/Operating Systems and the Main-Machine Interface.

Salary scale: Lecturer II - £7,215-£11,563
Senior Lecturer - £10,855-£18,443

Details and application forms from Establishment Clerk, The Polytechnic, Wolverhampton WY1 1SB or Telephone: Wolverhampton (0902) 718664 (Answerphone). (6814)

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Southampton is within easy reach of the New Forest, Hampshire beaches and countryside. An excellent relocation package is available.

Application forms are available from the Computer Services Manager, Southampton Civic Centre, Southampton.
Telephone: Southampton (0703) 832495

Closing date: 23rd December 1983.

Southampton City

(6820)

UNIVERSITY COLLEGE CARDIFF

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The Department of Computing Mathematics and the Computing Centre

Applications are invited for this interesting fixed term (three year) Research Fellowship funded by Datatype Ltd.

Graphics Transfer Protocols and Graphics Editors will form the main area of research and the successful candidate will also be expected to contribute to the development of a specialist graphics workstation.

It is expected that the person appointed will have recently completed a doctorate and will be experienced in, and be able to demonstrate a knowledge of, computer graphics using mainframes and/or microcomputers.

Salary range: Research IB/IA £8,130-£11,815 per annum.

Duties to commence as soon as possible.

Applications (two copies), together with the names and addresses of two academic referees, should be forwarded to the Vice-Principal (Administration) and Registrar, University College, PO Box 78, Cardiff CF1 1XL from whom further particulars may be obtained.

Closing date: 30th December, 1983.

Ref: 2725.

(6882)

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY

SYSTEMS ANALYST/PROGRAMMER

(Administrative Computing)

Systems analyst/programmer required to assist the Administrative Computing Development Officer in the design and development of selected parts of a fully integrated administrative computing system. The initial test will be to assist at the definition stage of a project on Registry computerisation followed by the design, program and test of portions of the system.

Proven success in the development of structured, fully documented software is necessary and experience in data base design and usage desirable. The ability to co-operate closely with Registry staff and to translate their operational requirements into user-friendly software is very important.

Initial appointment will be for 5 years. Salary in range £8,310-£11,815 per annum plus £1,188 London Allowance according to qualifications and experience.

Further particulars and application forms are available from the Personnel Secretary (01-589 5111 ext 2003), Imperial College, London SW7 2AZ. Closing date for receipt of applications - Friday, January 6, 1984. (6828)

UNIVERSITY OF CAMBRIDGE

COMPUTING SERVICE

The Cambridge University Computing Service provides a range of services to the University and to many other academic institutions in the UK. The main facility consists of an IBM 3081D supporting a large and varied range of applications. Other services include networking, microprocessor support and a hardware maintenance service. There is one vacancy for a well-qualified and experienced professional.

COMPUTER ENGINEER

To join a small team involved in the design, construction and maintenance of computers and data communications equipment, both within the Computer Laboratory and in other departments of the University. The work is varied and gives excellent scope for diagnostic ingenuity. Appointment will be to a Computer Officership in Grade III or Grade IV on salary scales between £3,745 to £4,710 plus USS benefits. Further particulars may be obtained from the Acting Director of the University Computing Service, Computer Laboratory, Corn Exchange Street, Cambridge, CB2 3UB. The closing date for applications is 15th January 1984. (6831)

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COMPUTER OPERATIONS CONTROLLER

Scale 9. Salary Scale £8990 to £10900 inclusive of London Weighting. Required at the Headquarters of the Public Health Laboratory Service in Colindale, London. You will be responsible for the management of computer operations at Colindale and actively involved in the detailed planning and implementation of the re-siting of existing equipment in a new building scheduled for completion at the end of 1984. Some travel to provide assistance and advice to other PHLS laboratories distributed throughout England and Wales will be required.

Two years' experience in a supervisory role and knowledge of on-line systems and data communications are essential and knowledge of CTL mini computers would be advantageous.

As a senior member of a small team a high degree of personal enthusiasm and commitment is essential.

Application forms, job description and further particulars are available from the Personnel Officer, Public Health Laboratory Service Board, 81 Colindale Avenue, London NW9 5EQ, tel: 01-200 1295 ext. 40.

Closing date: 6 January, 1984. (6871)

ST. THOMAS' HOSPITAL

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SHARPEY-SCHAFER CENTRE

COMPUTING IN PATHOLOGY LABORATORIES

Applications are invited for two posts of Programmer/Analyst in the Department of Computing Science. Candidates should hold a degree or equivalent qualification and have experience in FORTRAN and Assembly Language programming.

Successful candidates will initially join a small and highly active team working on the production of an integrated, portable computer system for use in pathology laboratories. They will be responsible for designing, writing and documenting programs for the capture of laboratory results and the production of clinical reports.

Salary on a scale rising to £10,067 including London Allowance. An additional ADP Allowance of £277 or £554 may be paid for appropriate experience.

Application forms and further details are available from the Personnel Department, St. Thomas' Hospital, 01-928 8252, ext. 2622.

For an interview, please ring Neil Bone on 01-928 8252.

Unsuccessful applications: 21 December 1983. (6866)

STAFFORDSHIRE EDUCATION COMMITTEE

STAFFORD COLLEGE OF FURTHER EDUCATION

Lecturer Grade I in Computing

£5,649 to £9,735 per annum

Application forms and further particulars for the above 2 posts are available from the Chief Administrative Officer, Stafford College of Further Education, 821 Street, Stafford ST14 2DB.

Applicants are asked to note that the closing date for applications is 21 December 1983.

UNIVERSITY OF NOTTINGHAM

CRIPPS COMPUTING CENTRE

APPLICATIONS PROGRAMMER

Applications are invited for the above post within the Computing Centre.

The Centre operates an ICL 2972 and 2976 under VM/VS together with a VAX 11/780 under VMS. It is responsible for the design, development, testing, and maintenance of applications programs, as well as the design and development of new systems. It also provides a service to other departments in the University.

The successful candidate will be working in the general areas of applications development, system development, and system maintenance. They will be responsible for the design, development, testing, and maintenance of applications programs, as well as the design and development of new systems. It also provides a service to other departments in the University.

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Unsuccessful applications: 21 December 1983. (6866)

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Duties: to follow-up and analyse technical reports; to assist project leaders in implementing programmes.

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SALES BIT

Quality of Management - 76

Profit-based commission is unfair

ON several occasions I have been asked my opinion on sales commission schemes which are based on profit margin as opposed to revenue. Without hesitation I have always recommended against such an approach, for I believe it to be completely unfair in the normal selling situation where the salesman has no authority to modify the selling price.

Even where the salesman is authorised to give discounts, it is always within parameters dictated by the company. He cannot, for instance, deliberately sell at a loss. So the control of the selling price and, consequently, the minimum profit margin, is still under the control of the company, not the salesman.

The primary role of the salesman is to satisfy the needs of the customer and close the sale. He has no responsibility for production, raw materials, labour, delivery and other costs. He has no control over costing, price fixing, total cost of sales and marketing. Yet these are the integral components

of the events that occur before the product is delivered to the client and after he is paid his commission, a mystery that neither purveys challenge, nor generates curiosity.

I recall a situation in the service bureau industry when things were pretty tough and we were beginning to wonder where the money was coming from to pay our suppliers and employees.

I was busy exhorting my sales team to make more calls and close harder and all that good stuff. We had managed to generate a reasonable prospect portfolio, but we didn't seem to be able to get as many decisions as we would like.

Of course, some salespeople were more successful than others, and I was obliged to put some pressure, as well as give more support, to those who were not doing so well.

One day, a salesman came in to give me the news that he had the go-ahead for the first stage of a project from a major prospect which we had been pursuing for

I am continually surprised at the total lack of business understanding that resides within most salespeople, particularly when it comes to that basic reality - money

ments from which profit is ultimately calculated.

Why, therefore, should it be considered reasonable for the salesman to have his income based on a factor largely out of his control?

There is one rather obvious reason - frugality and lack of commitment to the salesman on behalf of the employer.

Profit-based commission schemes may be put forward as "an incentive for the salesman to pursue truly profitable business".

However they are, in my mind, usually due to the company minimising its risk of paying out commission on business that is already less profitable than it would like, or can afford.

This in turn is often due to inadequacies and problems within the organisation that are introduced long before the product reaches the salesman.

Another facet of profit-based commission is the implicit suggestion that every salesman knows better than the company the price that should be charged for the product in every selling situation.

That's got to be a joke. If you took away from the computer industry every salesman whose instinctive inclination was to provide the best product at the cheapest price, there wouldn't be enough left to crowd a telephone box.

Okay, that is somewhat overstated, but salesmen are renowned for their false belief that price is the most important factor in closing the sale.

Having said all that, I must add that preoccupation with revenue does little for the salesman's appreciation of profitability. Neither does it assist his understanding of the total company operation.

I am continually surprised at the total lack of business understanding that resides within most salespeople, particularly when it comes to that basic reality - money!

By money, I don't mean the money salespeople are paid. I have never met a salesman who did not have total recall when it comes to relating the facts that constitute what goes into his pocket. I mean the money on which a company operates its operational lifeblood.

It seems that for many

some time. The requirement was large, as was the potential revenue. It was a very big deal.

I congratulated him heartily; and that evening we had a drink together. "Well", he said, "I guess that solves our financial problems!" I agreed, before I had really thought about it.

After studying the bottom of my beer glass for a few moments, I found myself saying: "Actually, it doesn't help at all."

He was taken aback and I could tell from the look on his face that he was expecting a revelation on pending bankruptcy. I felt obliged to explain.

To go through what I said in detail could be summed up by the following notional table:

	Cumulative weeks
Feasibility study	2
System design	5
Program specification	7
Program writing and testing	15
Implementation	16
Parallel running	17
Acceptance of system	17
Despatch of invoice	17
Typical credit taken	29

In other words, over six months would elapse before getting the order and money actually being paid into our bank account. There are such things as deposits and staged payments, but the payment that contains the profit is the final one, and that is the one the end-user makes when he has totally run out of excuses for not doing so.

It is an essential part of the sales manager's duty to make his salespeople aware of the financial realities of company cashflow and emphasise individual responsibility for ensuring that accounts are settled at the earliest possible opportunity.

Indeed, company survival may ultimately depend on it.

Alan Williams

PUZZLE ANSWER

FROM the nature of the four-equation set, it can be deduced that aa, bb, cc and dd must all be divisible by 3. This helps a lot in finding the solution, which is: (1) = 9, (2) = 198, (3) = 369 and (4) = 522. The four squares are: 81, 39204, 136081 and 272484.

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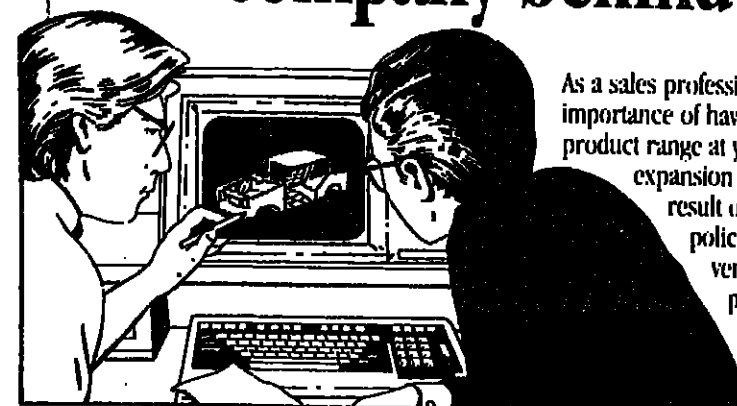
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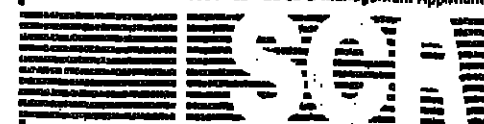
Reporting to the Technical Support Manager, and deputising for him on occasions, you will have complete responsibility for ensuring the effective utilisation of all manufacturers and proprietary software, and for the installation and maintenance of systems products and sub-systems (eg CICS/VS, VTAM, NCP, Compilers, SORTS, Development tools and On-line interfaces). In addition you will be expected to provide technical support to Systems Development and Operations Staff, monitor the performance and capacity of software, and liaise with the IBM Support Centre and Software Engineers in evaluating new techniques and solving operating problems.

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Thursday, December 8, 1983

Plea for printout as court evidence

by George Black
THE government is being urged not to treat computer evidence in court as a special case in the Police and Criminal Evidence Bill.
Home Office plans for a special clause defining the circumstances in which computer printout can be accepted have met a chorus of disapproval from leading academics and industry experts.
They say computer evidence should be treated as no different from any other form of evidence, and that the attempt to regulate it separately could exclude valid documents.
The much-criticised decision in the controversial Pettigrew case - in which bank listings produced by computer were ruled out of order - has stirred the experts to press the government for a clearer law. But now they are worried they may get a heavier response than they were calling for.
The Home Office says it will recommend changes to the Bill, which is now early in the committee stage in the Commons. It has sought advice from several academics and interested associations.
But Professor John Smith of Nottingham University said he was afraid that a special clause would only complicate matters. Some evidence which would normally be unacceptable as hearsay might become acceptable merely by being processed by a computer, he said. He has written to the *Criminal Law Review* arguing for minimal legislation.
And Professor Colin Tapper of Oxford University has told the



KELMAN... Fears of "trial by computer".

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He spoke of a general apathy in the legal profession towards what he saw as an urgent issue.

US official calls for cut in embargo on high tech exports to Russia

by George Black
A SENIOR US governmental official has criticised the West's embargo on certain high technology shipments to Russia as too restrictive.
Commerce Secretary Malcolm Baldrige said in a television interview that the list, devised by NATO's co-ordinating committee (Cocom) for the control of strategic commodities exports, should be cut by up to 60%.
His remarks are being interpreted as the strongest reply yet by the US Commerce Department to the Pentagon campaign for tougher restrictions on trade in computers and electronics.
Baldrige was speaking during a five satellite interview on the US Information Agency's programme *Euronet*, broadcast on November 30.
He was asked if he was happy

with the situation that had developed since the question of trade limitations was raised at the Ottawa and Williamsburg summits.
Baldrige said there was an awareness both in the US and in Europe that Cocom had become unwieldy.
"We have thousands of items in there," he said. "Time and the state of the art have passed by a good many of them. As a very broad estimate I would say we'd be much better off if we could take 50% or 60% of the items on Cocom now and just take them right off the list and do a better job on concentrating on the top third of the list that is the most sensitive."
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Voices and alarms

■ From front page
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The pilot studies are to be completed in six months at a cost of £50,000 to £100,000 each.
Clarke said four or five of about 10 pilots to be undertaken would be chosen next year to get the go-ahead for implementation. The demonstrators will cost £4 million to £8 million each to complete over five years and are hoped to generate a total of £100 million each of new business.

ICL doubles its profit

■ From front page
for DRS office systems has doubled last year.
Laidlaw said ICL was shipping 1,000 PCs a month, and that mainframe sales had been up 10% last year.
Wilmot defended the early announcement of the DM1 machine: "We've got people investing in distributed machines, knowing that DM1 will be compatible."
ICL had "some growth" in the American markets, which brought in £19.8 million. "Over the last two years we have made significant changes in our approach to the US

marketplace," said Wilmot. "We are now targeting two areas, DRS and retail systems."
ICL finance director Robin Biggan said that for the first time in three years there was real growth overseas particularly in South Africa, Sweden, Netherlands and Germany.
Marketing director Peter Bonfield said ICL aimed at getting 60% of its business outside the UK in the long term. At present about 40% of its turnover comes from abroad.
■ Analysis of ICL results - page 8.



BAKER... Go-ahead comes four months behind schedule.

Tenders soon for teletex experiment

by Donald Keenett
TENDERS are to be invited soon for the Department of Trade and Industry-backed Project Hermes teletex experiment.
The government wants to promote teletex for electronic mail and document ordering and delivery.
Information Technology Minister Kenneth Baker gave the go-ahead last week, four months behind the schedule proposed in the planning study submitted by Scicon in June. He said: "Hermes will encourage industry to create new business activities in the information sector."
A DoTI spokesman said the delay was because of the time it had taken to consult users. The Department was now pressing ahead as fast as it could go. More than 100 companies had said they were interested in taking part.
Letters are to go out in the next few days to all who have shown an interest in managing the project and this will be followed by formal invitations to tender. Any other companies interested should contact the DoTI.
Teletex has been slow to take off, partly because it has been launched by telecommunications authorities in competition with their own existing telex services, and it has been criticised for being too limited.
Logica chairman Philip Hughes said at a conference last week:

Inmos and Intel sign dynamic RAM deal

by Dave Madden
INMOS, the government-funded semiconductor manufacturer, has made an informal agreement with Intel to develop dynamic RAMs to common functional specifications.
Although the deal is couched in the vaguest terms, both companies insist that it does not represent a traditional second sourcing agreement. An Intel spokesman said: "There is no transfer of manufacturing - as strictly defined this is not second sourcing."
Inmos will not be manufacturing parts for Intel, but an Inmos spokesman said: "The agreement gives us both effective second source."
Inmos will use its own design and process technology, developed for the transputer, to build CMOS parts that will be functionally compatible with Intel's new CMOS 64K dynamic RAM, and planned 256K part.
What the companies do not agree on is whose spec will be followed. Intel said: "There is no technological contribution from Inmos, which has seen our spec and will produce a compatible part."
But a spokesman for Inmos claimed: "We were both well down the road, and there were lots of points of similarity. We haven't merely copied their spec."
The announcement comes at a critical moment for Inmos. The government is dressing up the company to lay before the City and potential US investors, and the reflected glory of having its name associated with Intel can do it no harm.

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Plea for printout as court evidence

by George Black

THE government is being urged not to treat computer evidence in court as a special case in the Police and Criminal Evidence Bill.

Home Office plans for a special clause defining the circumstances in which computer printouts can be

accepted have met a chorus of disapproval from leading academics and industry experts.

They say computer evidence should be treated as no different from any other form of evidence, and that the attempt to regulate it separately could exclude valid documents.

The much-criticised decision in the controversial Pettigrew case - in which bank listings produced by computer were ruled out of order - has stirred the experts to press the government for a clearer law. But now they are worried they may get a heavier response than they were calling for.

The Home Office says it will recommend changes to the Bill, which is now only in the committee stage in the Commons. It has sought advice from several academics and interested associations.

But Professor John Smith of Nottingham University said he was afraid that a special clause would only complicate matters. Some evidence which would normally be unacceptable as hearsay might become acceptable merely by being processed by a computer, he said. He has written to the Criminal Law Review arguing for minimal legislation.

And Professor Colin Tapper of Oxford University has told the

Home Office they should eliminate the clause on computer evidence altogether, leaving it to be treated like any document whose author could not be present in court.

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"It would be much easier to control, much easier to get agreement on and certainly would be done more expeditiously."

Cocom is only one of the current battlefields between the two arms of the administration. Commerce

and Defence were also still locked in combat over the new US Export Administration Act when Congress adjourned until the New Year.

President Reagan has emergency powers to control exports from the US following the expiry of the previous Act in the autumn.

A House of Representatives proposal for a new law is being fought by the Customs service which argues that it would underfund ventures like Operation Exodus - a clampdown project which has led to 2,000 shipments being intercepted and over 200 convictions. The most recent involves boxes of computer equipment bound for Russia that has been stopped at Swedish Customs.

The Customs has issued a set of tips to its agents, one of which is to watch for shipments through Canada to non-Canadian end-users.



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by Donald Kennett

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Teletex has been slow to take off, partly because it has been launched by telecommunications authorities in competition with their own existing telex services, and it has been criticised for being too limited.

Logica chairman Philip Hughes said at a conference last week:

"Frankly, it's over-engineered and it does word processing badly. It communicates well, but it's too expensive and too terminal-oriented. If it had taken a software approach, it could have taken off better."

It has also been said to be vulnerable to competition from IBM's Document Content Architecture and Document Interchange Architecture (DCA and DIA) standards.

Teletex has been in use in Scandinavia and West Germany for two years, but only last week made its UK debut with the first public commercial transmission.

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Voices and alarms

■ From front page

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ICL, partnered by Logica, is investigating the introduction of artificial intelligence into DHSS local offices. GBC, with Edinburgh University and the National Engineering Laboratory, is launching a factory automation plan.

Racal is researching portable information terminals, in a scheme that involves SPL, BL Technology, Loughborough University and the Transport and Road Research Laboratory. Marconi Avionics is studying underwater systems for the oil and gas industries.

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■ From front page

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